**Virtual Office Design For The Effectiveness Of Web_based
Office Administration Works**

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Abstract— **Virtual Office is the science of information technology which is a new thing for some people. The word of virtual has a meaning of visible or tangible, it means that in the future an office is intangible because it will be replaced by a system which is specifically designed to replace the role of office by applying web -based computer programming. Nowadays, Offices have been applied are still using a certain place with a wide range of file and requiring a storage cabinet. These issues triggered the researcher tried to design a virtual office with a concept which is able to handle a variety of problems, ranging from archival storage , searching the archives , phone , video conference , sending letters, categorizing archives and saving faculty and staff data. These concepts developed by the researcher offered well organized data that all files or all archives of administrative office tucked neatly away in a database in well organizing so it made easier in searching a spesific archive. The final objective of the research is the improvement of the workers' performance because it will shorten the time to manage archives or files. Manufacture of incoming mail, outgoing mail, disposition and also numbering letters will be arranged neatly, thus will increase the effectiveness of a worker. (Abstract)**

Keywords-component; Virtual Office , Video Conference , Office Administration

I. INTRODUCTION

A. Background of the Research

Virtual Office can be said a new thing in the information technology world. Virtual Office can be meant no form-office because it is illusory. These office is designed to replace a conventional office used nowdays with the conventional systems in which the administrative runs manually . It is often found that office administrative systems used are still conventional way in which one person contacts another by using a letter then delivered by courier to the destination . This way causes problems to a person's performance because it takes time to deliver the letter .

Virtualization can be defined as the creation of a form or a virtual version from something physical, such as operating systems, storage devices/ storage of data or network resources. Virtualzation can be implemented into a variety of forms, including (Harry Sufehmi , Introduction to Virtualization , 20090607) :

1. Network Virtualization : VLAN , Virtual IP (untclustering) , Multilink .
2. Memory Virtualization : pooling memory of the nodes in the cluster .
3. Grid Computing : many computers = one

4. Application Virtualization : Dosemu , Wine
5. Storage Virtualization : RAID , LVM
6. Virtualization Platform : virtual computer

Technology of intranet or Internet network can be used for communication between the people to support the administration office. One person to another person will be interconnected using a wireless network where the network is used to access the applications that we design so that the application can be used simultaneously to support the performance of each person.

For person to person connection with a local network technology can be developed further with a chat application as a media to communicate to send or receive certain information . Chatting is known for it's ease in communicating to phone, to send text messages, to send e-mail and it can be linked with a webcam .

B. Problem Formulation

Office administration jobs have very complex problems ranging from numbering outgoing mail, file storage, searching the archives and storage of other files. The research will be conducted by the researcher is a prototype of an administrative office by taking the data and facts from the office of the Technique Faculty, Muhammadiyah University of Ponorogo .

From the explanation above, the researcher formulates some issues that will be the object of research, they are:

1. Designing an application that is able to connect multiple people in one system that can communicate with each other
2. How to design a virtualization of office to improve the work performance.
3. How to design a database that can be used simultaneously by the people concerned in an administrative office.

C. Research Objectives

There are three objectives of the research, they are :

1. To improve the effectiveness of the work in administrative office
2. To Design a database in order to facilitate the storage, to search and to categorize archive
3. To Design systems that can be used replace the role of an office.

D. Research Limitation

The idea of this research has limitation in which the implementation of applications will only be applied in the office of the Technique Faculty, Muhammadiyah University of Ponorog .

II. REVIEW OF RELATED LITERATURE

This study uses several references as an inspiration source. This review of related literature explained how these references trigger ideas on research .

Harindra Vishnu Pradhana , System Design for distance with a Class Web -Based. Presented for Seminars and Call for Paper Munas Aptikom Telkom Polytechnic , October 9, 2010 .

The study explained that the design of distance learning is designed with a web -based application with a user interface using PHP that there are a lot of tools to replace conventional learning process starts from the chatbox , video conferencing , video call and so on.

III. THEORETICAL CONCEPT

Virtual office arose as an attempt to achieve work efficiency resulting in cost reduction, one of which is a reduction in the use of physical office environment. A virtual office can provide significant savings and flexibility compared to renting traditional office space. Virtual office is an implementation of office automation efforts that aims to help owners or employees of the company to improve the work productivity. The existence of a virtual office a company owner or employee can "come" to a virtual office quickly, in fact the arrival and departure of the last virtually not physically come and be present in the office environment .

Creating a virtual office means preparing office automation infrastructure, doing the redefinition (redefine) office work processes, as well as prepare employees for working conditions through the concept of a virtual office. Redefinition of office work process and preparation of the employee conditions will involve the management process is quite complex, especially for companies that have been operating in the traditional way. While the office automation infrastructure, although it still involves management process is more often viewed from the side of technical integration. Office automation infrastructure can be composed of the following three types of applications:

1. Office applications, including word processer, table processer, presentation-slide processer.
2. Communications applications, including e - mail, messaging, voice - mail , telephone , fax , address book , etc. .
3. Collaboration application, which contains project management applications, electronic calendars, discussion forums, conferences applications and etc.

A web -based conferencing system is a good choice to be developed to support the effectiveness of the work. Virtual office is equipped with audio / streaming is a good development for use in the office administration system. The virtual boar, chatbox and file sharing is supporting facilities that can be loaded on the system. In addition to the existing conferencing functions to support the quality of the virtual office .

A. Audio / Video Streaming

Video streaming is technology to transfer dat , video or audio in compressed form over the internet that displayed by a player in real time . Users need a player which is a specialized application for decompression and transmit data to a video display screen and the data in the form of sound to the speakers. A player can be either a browser or a piece of software. Core of the streaming is dividing the data and encoding the data, then send it through the network and at the time of the data to the user, it will be decoding and reading data. The characteristics of streaming applications are of the distribution of audio, video and multimedia on the network in real time or on demand , media transfer digital data from the server and received by users as real time streams simultaneously so that users do not need to wait for all the data to be downloaded because the server sends data necessary any given time interval . It allows users to run the file content instantly with a short buffer period.

B. Chat or Instant Message

Instant messaging is an Internet technology that allows internet users in the network to send short messages directly at the same time by using the text to other users who are connected to the same network. The Concepts used by these technology in the very beginning of the development of the UNIX operating system and the Internet network; those the users who have logged in can send a command in the form of <code> talk < / code> , write and finger to see who is logged in and finally sends a short message to them .

C. Video Conference

Video conference is also known as video teleconference, itis an interactive telecommunication technologies which allow two or more locations to interact via video and audio simultaneosly. The main technology used in the video conference system is digital compression of audio and video streams in real time. The technology of video conference cannot be separated from the advancement of audio compression technology and video. A lot of of compression techniques available today allows audio and video can be transmitted simultaneously in a network with bandwidth as efficiently as possible and with acceptable quality . Hardware or software that has a function to compres is called by the codec (coder / decoder) . Codec is the stand for compression-decompression in which it is wrapping process of sound or analog video into digital data by using certain methods so voice or video transmission can be done in the form of data packets .

D. Hypertext Transfer Protocol (HTTP)

HTTP is a new innovation developed that allows internet users just playing the mouse button on the link - existing hypertext link to jump to other documents in various locations on the internet . These links may refer to web documents , HTTP server made specifically for the server and a web browser to be able to communicate with each other and to handle the requests from the browser to access the server .

HTTP can be regarded as the symtem in the form of client-server, in which the browser as the client request information from a web server while the web server will meet the demand client. All documents are sent as plain text. When the browsers send a request to a web server, they will send a little information about themselves and what they can be read by a web server. This information will be used by the web server to determine whether the document can be sent to the browser or not.

E. PHP (Hypertext Preprocessor)

PHP is a language in the form of script that is placed in the server and processed in the server. The results are sent to the client

, where the users use browser. PHP is specifically designed for dynamic web form. It means that PHP can form a view based current demand. For example, you can display the contents of the database to the web page .In principle, PHP has the same principle with scripts such as ASP (Active Server Page) , Cold Fusion or Perl .

PHP is begun when Rasmus Lerdof created scripts Perl that can observe anyone who looks at his curriculum vitae, ie in 1994 . Scripts are then packed into a tool called as " Personal Home Page " . This package became the forerunner of PHP. In 1995 , Rasmus created PHP/F1 Version 2 . In the version of the code, the programmers can paste the code in HTML tags. Interestingly, the PHP code can also communicate with the database and has function to do a complex calculation in the same time .

The advantages of PHP than any other programming are :

1. The Programming language of PHP is a scripting language that does not do a compilation in its use.
2. Web server that supports PHP can be found in everywhere; from apache, IIS , Lighttpd , nginx , until Xitami with a simple configuration .
3. it is easier in the development side, because of the many mailing lists and the developers who are ready to assist in the development .
4. In the comprehending side, PHP is the easiest of a scripting language because it has a lot of references.
5. PHP is an open source language that can be used in a variety of machines (Linux , Unix , Macintosh , Windows) and can be run in runtime through the console and also can execute system commands .

F. MySQL

MySQL is a database management system software which is very popular among web programming, particularly in Linux environment by using PHP scripts and database Perl. The software is now also available on operation Windows system platform . (98/ME or NT/2000/XP) . MySQL is the most popular database used to build web applications that uses the database as a source and data management. MySQL has performance, speed on the process and toughness not less than other major commercial databases such as Oracle, Sysbase , Unify and so on. MySQL uses a standard language of SQL (Structure Query Language) as an interactive language in processing SQL data. The SQL command is often called Query .

1 . Open Source

Anyone can participate to develop MySQL by using this concept and the results are given to the public or to the Open Source community

2 . Capability

MySQL has been used to manage the database with a record number of 50 million records. Indeed, it is able to manage 60.000 tables with number of rows 5.000.000.000. it also be applied to support the use of index up to 32 indexs per - table , whereas each index consists of 1 to 16 columns criteria.To enhance the provision of gas blow, it needs to be supplemented with a mixture of tin. It can cause parts of the gray tin with a size of approximately one micron. In heavy trafic, it can be more. Therefore, the addition of lead related to legal requirements.

3 . Connectivity and security

MySQL supports and implements advance permisssion and security systems, including support for security by randomizing the data layer (SSL transportlayer encryption) . Any level of user and the variety type of access can provide access restrictions based on the location (machine) accessed and the presence of password randomization system (encrypted password) will provide security on MySQL .

G. LAN (Local Area Network)

Local Area Network (LAN) is the number of computers that are linked together in a specific and no broad area, as in an office or building. Broadly speaking, there are two types of network or LAN, namely Peer to Peer network and Client Server network.

In the peer to peer network, each computer connected to the network can work both as a workstation and server. Whereas, on the Client - Server network , only one computer that serves as a server and other computers work as workstations. Each type of network has advantages and disadvantages, it will be explained through the following figure.
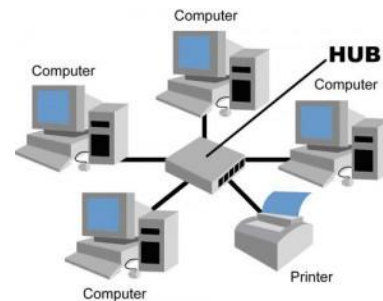

Figure 1. Local Network Topology
(Sofana : 2009)

IV.   RESEARCH METHODOLOGY

As a first step of this research, it is begun by visitation techniques to the research site to explore all the problems. All identified problems could be revealed as a reference to go to the next stage .

The next step is designing database and user interface. At this stage, the researcher is able to fumble or to design the application needed. Anybody who uses this application and what the users can do in using this aplication have been designed in this stage

V.   THE RESULT OF THE RESEARCH

A. Entity Relationship Modeling

Basic concept of *ER* model is the *Entity Type* which is the collection of the objects with the same *property*, that is identified by the enterprise who has independent existent. The existence can be found both physically and abstract.

In figure 2 below, it shows *ER Modeling* which is being the point in designing a database for *virtual office* application.
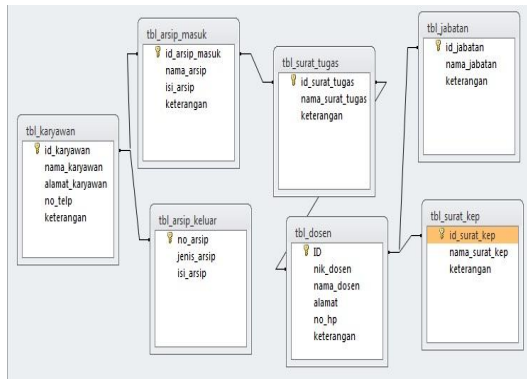
Figure 2. Entity Relational Diagram

B. Data Flow Diagram

System design uses the *Data Flow Diagram* (DFD). This design consists of the whole systems, the *user* who use the system as entity and wiring process. Figure 3 below is the model of DFD.
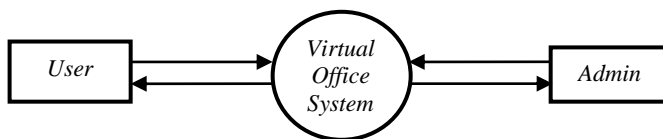

Figure 3 Data Flow Diagram

In DFD picture above, it is shown the data wiring from outside entity and admin. The input and output from the user as follows:
Input:
1.   Lecturer data
2.   Official employee data
3.   Inbox Documents data
4.   Outbox Documents letter data
5.   Official Letter data
6.   Decree data
7.   Archives data

Output:
1.   Lecturer data report
2.   Official Employee data record
3.   Inbox Documents data record
4.   Outbox Documents data record
5.   Official Letter data record
6.   Decree data record
7.   Archives data record

Meanwhile, in the Administrator Entity, the data wiring consists of input and output as follows:
Input:
1.   Lecturer data
2.   Official employee data
3.   Inbox documents data
4.   Outbox documents data
5.   Official letter data
6.   Decree data
7.   Archives data
8.   Chatbox data
9.   Video conference data

Output:
1.   Lecturer data record
2.   Official employee data record
3.   Inbox documents data record
4.   Outbox documents data record
5.   Official letter data record
6.   Decree data record
7.   Archives data record
8.   Create, read, update, and delete data

C. User Interface

User interface is designed as the way for designing layout from the application so that the design which is made can be used (*user friendly*). Figure 4 below shows the *user interface* design.
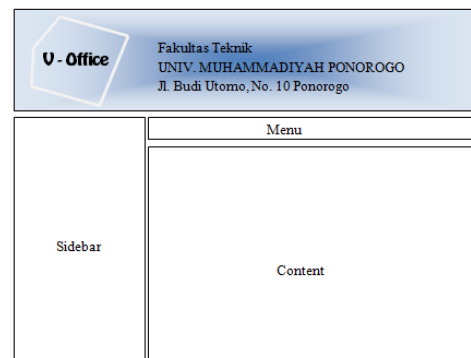

Figure 4. User Interface Desain

VI.   THE IMPLEMENTATION

A server is needed for keeping all the data and being a media as the subtitude an office. This server would be functioned as the virtual office there. Installing the server application by using xampp v1.7. software and database mysql software.

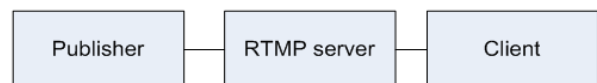In designing a live video streaming, it is needed some components which is shown in figure 5.

Figure 5. Component Video Streaming
(**http://net.comlabs.itb.ac.id/blog/?p=223**)

Publisher is as the encoder for changing the data which is got from the catcher tools (video/audio) to other format file that can be continued to RTMP server who will publish those stream data. To make it easier the user, the audio/video data usually are changed into flash video (using the codec Sorecon). The publisher itself is an aplication such as, JWPlayer (version > 4.5.207) which use the type=camera or Red5. In this Publisher, it is set the audio/video devices, file saver, or other link stream RTMP which is streamed.

RTMP server is being proposed to receive the stream from Publisher, so the user can accsess the result of the streams by client tools (browser/ media player). So that, the client access the stream to RTMP server and do not to the publisher again.

Client is the user side that show the flash movie which is the result of the stream from RTMP server. This client aplication can

be flash video player that is saved in web hosting and be opened by browser (the client only need the browser that is set the plugin flash) or media player which support the RTMP stream. Kinds of the flash video application are JWPlayer and Flow Player.

RTMP (Real Time Messaging Protocol) is the internet protocol that is used for audio/video streaming between flash player and server streaming. A special application is needed to receive and publish the RTMP connection from the stream server to user.

RTMP application server which is used such as Wowza (commercial), Adobe File Media Server (Adobe FMS, commercial) and Red5 (Open Sources). In this writting, we will implement the streaming server based on Red5. It is because the streaming server is free, it also has the same fitures with RTMP commercial server.

Red5 is an open streaming server source which is based on Java that support the audio/video streaming, recording stream, shared object (live chat, online presentation), live streaming stream, and so on. When this writting is made, the new version of Red5 is 1.0.0-RC2.Red5 and can be downloaded from the official web, http://red5.org/, and can be installed in linux operation, Windows and MacOS.

IN RTMP, such kind of HTTP access, to access a stream, client should direct the media player to URL steram of RTMP which is in form of rtmp://IP-server/folder-aplikasi-stream/channel-stream.

The folder-apikasi-stream is an application archieve stream directory which is possible for the publisher to direct his/her capture of audio-video/file media. This application is the Red5 application which is written in XML language. We can use this demo application which is served by Red5.

Meanwhile, the channel-steram is a way of streaming which can be accessed by the client. The different result of the audio-video/ file media set can be purposed to the same stream application but in different channel. The client just choose which channel that is shown.

After all sets are installed, the next step is installing the open meeting conference system. This conference system can be downloaded in http://code.google.com/p/openmeetings/. The installation process can be done by separating the files to the Red5 server directory which is installed.

Both of these PHP and conference system are made by the open meetings gateway which is served in the same site that is being a plugin. Meanwhile the relation between PHP and basis data MySQL can be done by using PHP fungtion that is served, such as mysql_connect(), mysql_query(), and so on.

VII. CONCLUSION

As a conclusion of this study is that the researchers developed a virtual office application can improve the performance of employees in carrying out their daily work. As many as 65% of respondents chose to implement a virtual office application is due to be faster in the delivery of mail in or out.

There are several obstacles in the implementation of the virtual office is the customs employees and lecturers in the integration process of the conventional ways to computerize way.

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