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E-ARCHIVE APPLICATION BASED ON WEB (CASE STUDY: PT DIRGANTARA INDONESIA (PERSERO))

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ABSTRACT
In this research, the author will build a system to assist employees in archiving documents at PT Dirgantara Indonesia by building a "Website-Based E-Archive Application" system. The approach to the development of this software is to use the prototype method. This prototyping method includes communication, rapid planning, rapid design models, prototype development, and submission and provides feedback. The database used in the development of this software is MySQL and the coding used in the development of this software is a Codeigniter and bootstrap framework. In this research, the authors built software that is expected to be able to assist employees in archiving documents at PT Dirgantara Indonesia.

Keyword: E-Archive, PHP CI, Mysql

INTRODUCTION

Archives have an important role in the survival of organizations both government and private organizations. Benefits of an archive for an organization that is the archive contains information that is useful in decision making and can also be used as evidence if a problem occurs and can be used as a tool of legal accountability.

PT Digantara Indonesia is a company engaged in the aircraft industry. PT Digantara Indonesia is a large scale company. Large companies must have a lot of records that must be managed. If it is managed traditionally, it will result in the possibility that the records will be scattered, destroyed or even lost while the archives have an important

position in a company, especially when the procurement department which routinely records will be audited by internal or external parties or when taking decision.

The information contained in the electronic archive can be easily changed, deleted and modified as needed. Besides, the physical durability of electronic records is very limited, the more frequently used electronic files will be more quickly damaged and for the physical maintenance of electronic files also require a good storage method. Besides there are some difficulties in managing electronic records, several advantages can be obtained from managing electronic records, which include: saving space, large storage capacity, access to information faster and minimize the destruction of documents.

Based on the above background, an e-archive application is made that can manage information efficiently in archive management and be a lazy solution that existed before. Based on the background of the problem, researchers consider it important to raise the case above into research by taking the title: E-Archive Application Based on Web.

LITERATURE REVIEW
Archive
Archiving is the process of preserving and protecting artifacts for future use. The artifacts have lived beyond their useful life are being kept solely for the purpose of satisfying future historical investigations or curiosities that might or might not occur. An archive is a place where their artifacts are stored for long periods of time. They are retained in case someone will want or need them in the future. They are also kept in a manner so that they can be used in the future (Olson :2010).

Each archive has a value associated with the consciousness of the present of the past either the value of information or the value of proof. Therefore, awareness to document, collect, store and organize archives is needed by every company. According to Olson, various types of archived information were collected by companies in the following forms:

a. Phsycal documents, today there are still many examples of important phsycal documents that must be retained for long periods of time, including blueprints, order forms, photographs, and application forms.

b. Electronic files, the most basic form of electronic archiving is file archiving. File archiving basically refers to making a copy of an entire file as known to the operating system file system and storing it somewhere else.Electronic files including VSAM (Virtual Storage Access Method), Programs, UNIX files.

c. Text documents, companies accumulate a large number of text documents that generally take the form of Microsoft Word files, Acrobat PDFs, spreadsheets, PowerPoint documents, and similar file types.

d. XML documents, an archive of XML documents is considered self-defining because each data elemnt has identifier tags in its text body, describing what the element means. However, it is self-defining only to the extent that a future reader can understand what the identifier means. Often the identifier convey little useful information.

e. Emails, this form of electronic archiving is the most known and the most discussed. There have been numerous high-profile cases involving enterprises inability to statisfy legal discovery request for emails.

f. Multimedia and other complex documents, multimedia data refers to pictures, videos, and images scanned into a computer. Other examples of complex documents are digitized X-rays or output of magnetic resonance imaging (MRI) devices. Specialized presentation programs are needed to display the archived documents.

g. Databases, data stored in relational, hierarchical, or network databases falls under the heading of databases. This category also includes flat files that have records that conform to a specific record layout known to the user.

Development of Archive
This historical overview serves as a starting point allowing me to situate the emergence of digital archive within development of archival theory in the 1990s. the practice of systematic archiving is still an essential component in the modern development of the archival discourse and has been outlined by archival historians in three streams:

a. Archival discourse published in the late nineteenth century, in the late nineteenth century, Dutch trio of Samuel Muller, Johan Feith and Robert Fruin published their Manual for the Arrangement and Description of Archives, a publication that articulated the principles used later in early twentieth century archiving.

b. Archival discourse developed between the 1940s and the 1990s, the archival discourse mainly focused on processes of selection and appraisal, implicitly and sometimes explicitly questioning the assumptions informing the traditional streams.

c. Postmodern archival theory created after the 1990s, in the twenty-first century, the precending questions still color the landscape of archival theory by creating a discursive space for archival ideas that goes beyond the mere arrangement and description of material in archival collections. The adaption and establishment of the Internet as a research tool has led to the recent development of digital archiving   at   the   turn   of   the   millennium. (Source: Hecht,2013)

Archives in the Industrial Revolution Era 4.0
In the 4.0 industrial revolution, the efficiency of machines and people have begun to be connected with the internet of things. Industry 4.0 is the name given to current trends in automation and data exchange. This includes cyber-physical systems, the Internet, cloud computing, and cognitive computing. which is marked by Artificial Intelligence (AI), Internet of Things (IoT), Unmanned Vehicles (UAV), Mobile Technology (5G), Shared Platform, BlockChain, Robotics, and Bio-Technology.
Archives in the industrial revolution era 4.0 have been electronic-based, no longer using conventional media along with the development of existing technology. This has become the challenge of the archival world in managing electronic records. Challenges in managing archives in the era of the industrial revolution 4.0, including:

a. The archives created will lead to digital technology and cloud computing-based archives, so that the abundance of data and information, cyber-physical systems, to the management of big data requires archivists to increase their capacity in understanding information technology.

b. Archival governance is driven to optimize the sophistication of technology. Archival adaptation is no longer only in the form, system, and pattern, but also in its function of maintaining the connectedness of information in archives, with human activities at the time and age of the archives used, through electronic distribution patterns.

RESEARCH METHODOLOGY

The research method used in this study is a descriptive qualitative analysis research method. The purpose of the descriptive-analytical research is to make a description, or description systematically, factual, and, accurately about the facts, properties, and the relationship between the phenomena under study. Following is a qualitative descriptive analysis of the filing system at PT Dirgantara Indonesia (Persero) Department Of Procurement:

Analysis of the Current System

Systems analysis is the process of breaking down problems into smaller elements to be studied to deepen information system problems. The final result of system analysis is a way to solve problems that occur in the new system specifications. In the analysis phase, an analytical approach is needed to avoid errors that might arise in the next stage, namely the design of a new system. Because at this stage it is a very important stage, the approach taken is defining the problem in the current system and at the same time evaluating each way the system runs based on procedures in PT Dirgantara Indonesia's procurement department. So that the problem will be known as well as the difficulties faced by the system that is running, what are the effects and should be considered as a validation of the target system that was designed before repair.

Analysis of System Requirement

This system needs analysis is done by the prototyping method. Analysis of e-archive system requirements is modeled using the prototyping method, by applying UCD (User-Centered Design). The following flowchart below:
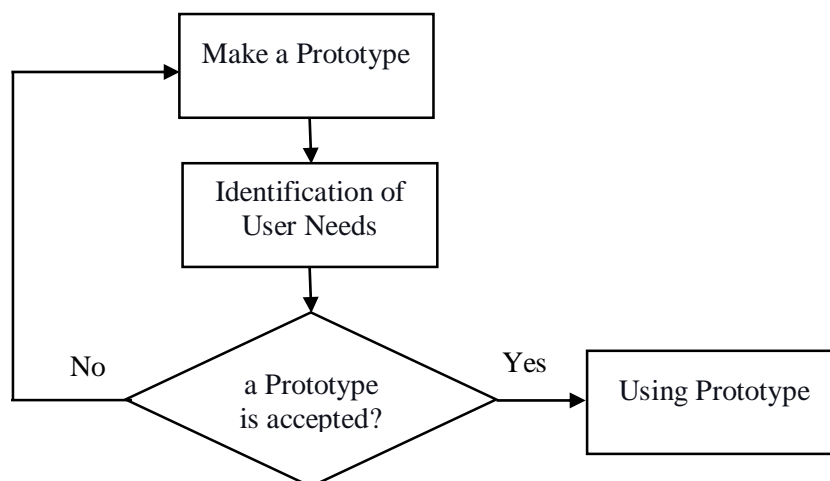
Figure 1 Flowchart Metode UCD

Stages that must be passed in the UCD prototype method include:

a. Understand user needs.

b. Describe user needs.

c. Design a prototype as an alternative.

d. Evaluating the design.

Analysis of Problems
To find out the user's needs, interviews were conducted with two users namely the storage operator and the user of the document, the results obtained with the following main problems:

a. The process of saving documents takes a long time.
b. The ability to access archived documents is still very dependent on one individual working on archiving.
c. There is a risk of corrupted documents in storage
d. Finding documents takes a long time.

From the problems expressed by the user above, it can be concluded that keywords that can answer the user's needs are: An application that can work fast, can store and manage documents securely, and search documents quickly.

FINDINGS
System Design
In the system design phase, the system is carried out modeling the system using UML, designing a database that will be used as a data storage medium for web-based archival data management information systems, and designing the interface as a means of interaction between the system and the system user. The system design consists of:

a. Usecase diagram design, usecase explains the interactions that occur between actors with the initiator of the interaction of the system itself with the existing system.
b. Designing scenarios, the design of this scenario is to describe and anticipate future events and conditions that might occur, the consequences, and how to overcome them.
c. Design the Activity Diagram, the activity diagram illustrates the activities that occur in the filing system in the company from the beginning to the end of the activity.
d. Class Diagram Design, Class diagrams illustrate the classes required in an archived data management system and illustrate how these classes are related.
e. Database Design, at this stage, an ERD (Entity Relationship Diagram) will be designed where the ERD designer is used to describe the relationships between entities in the database that will be used on the system to be built.

f. Interface design, the design of the application interface aims to provide an overview of the application to be built so that it will be easy to implement applications. There are stages in interface design, which are: designing the login interface, designing the dashboard interface, designing the document archive table interface, designing the archive data form interface, designing the supplier table interface, designing the supplier data form interface, and designing the user table interface.

System Implementation

The method used in developing this software is the Prototype Methodology. The prototype is a software development method that is widely used by developers to interact with customers during the process of making the system and consists of 5 stages that are interrelated or influence, namely as follows:

a. Communication / Communication
    Have a meeting with the person concerned to determine the software requirements that are currently known and to illustrate areas where the further definition for the next iteration.

b. Quick Plan / Quick Planning
    In this planning, iteration is made quickly. After that, the modeling is done in the form of "quick design".

c. Modeling Quick Design / Model
    Quick Design, at this stage modeling the plan using several object-oriented models using UML tools namely Usecase to define the functions of the system, Class Diagrams to show classes on the system, Activity Diagrams to describe the flow of business processes.

d. Construction of Prototype / Prototype Making
    In making fast designs based on the representation of aspects of the software that will be seen by end-users. Quick design is the basis for starting prototype construction.

e. Delivery Deployment & Feedback / Submission And Provide Feedback On Prototype Development
    At this stage, the researcher submits to the user to evaluate the prototype that was made beforehand and provides feedback that will be used to improve the requirements specifications.

Resource Requirement

Resource requirements are divided into 2, that is:

a. Hardware Requirements, the minimum hardware configuration to support the system designed is as follows: 1.6 GHz Processor, minimum 2GB RAM, minimum 40GB hard drive, Mouse, Keyboard: Standard, and Monitor: Standard.

b. Software Requirements, the minimum hardware configuration to support the system designed is as follows: apache Server, PHP version 5.6, MySQL, and Codeigniter Framework.

Implementation and Software Testing

Interface design implementation uses HTML5 and CSS. While the system uses the PHP programming language, the database used is MySQL. The interface implementation used in this E-Archive system is as follows:
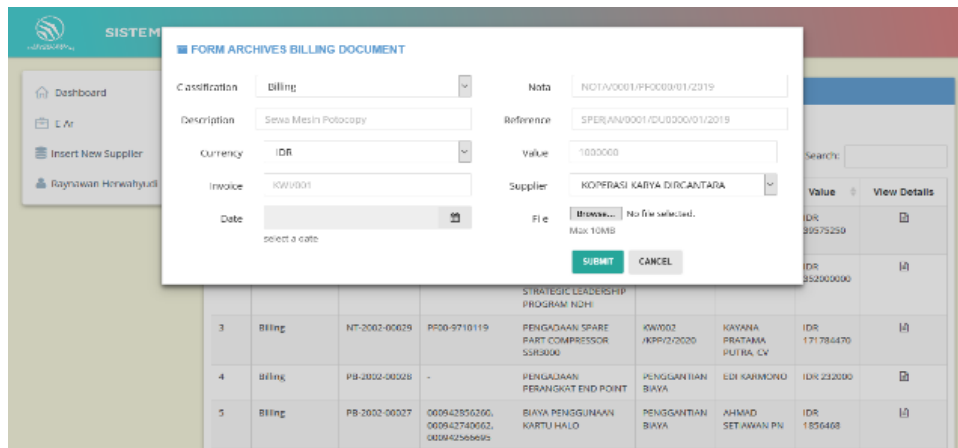
Figure 2 Archive Data Form

On figure 2, archive data form is the function to add the archive data that you want to input/upload to the database.
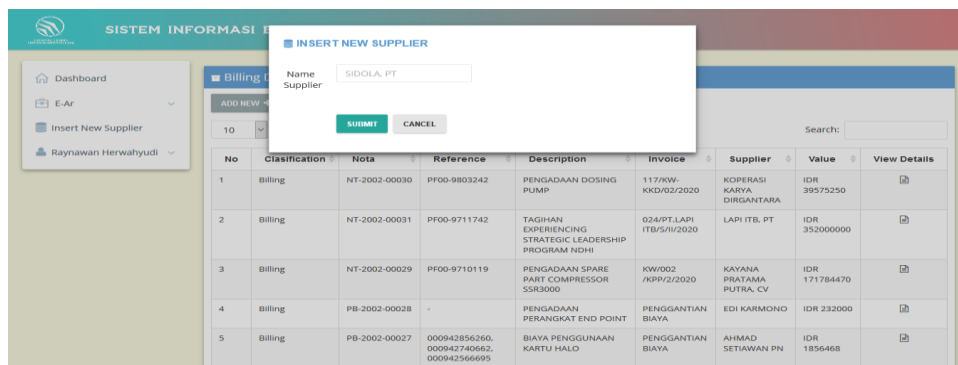

Figure 3 Supplier Form Page

On figure 3 Supplier Form Page serves to add supplier data related to the Procurement Departement of PT Dirgantara Indonesia.

At this stage, the system testing will be conducted which aims to find errors or deficiencies in the software being tested to meet the criteria following the design objectives of the software. Testing this software uses black-box testing. Black box testing focuses on the functional requirements of the software without testing the design and program. Here are the results of black-box testing on the E-Archive application:

Table 1 : Application Testing Scenarios E-Archive

Testing Feature	Testing Details	Type of Testing
Login	Fill the form	*Black box*
Users Form	Manage users	*Black box*
Suppliers Form	Manage suppliers	*Black box*
Archive Form	Manage archives	*Black box*

Archive Recap List	Download archive data recap	*Black box*

Unwanted things can happen without specific testing especially on the interface where programming dynamic capabilities of interface elements blend using HyperText Markup Language (HTML) as well as the presentation of documents with Cascading Style Sheets (CSS), so that in running the system as a web-based application effect on the web browser to run the system as a web-based application.

CONCLUSION AND DISCUSSION
Conclussion
In this research the following conclusions can be described:

a. PT Dirgantara Indonesia before using the E-Archive system to save document archives manually, data is inputted in Microsoft Excel and physical documents are archived, in the process of managing this archive requires a long time in archiving the physical documents so that sequentially. With the E-Archive document management process is more efficient by saving document data digitally.
b. Before using E-Archives, the Procurement Department relied heavily on one person working on archiving, this was very inefficient when requiring urgent data and the individual was not in the office. E-Archive document can be accessed by anyone who has an account, so there is no dependency on one person working on archiving if urgent data is needed. So, with the E-Archive a solution to these problems.
c. The need for archive space is not needed when using E-Archive, because some archives are already paperless and saved digitally in harddisk thus reducing the risk of damage to documents compared to physical documents that are vulnerable to being lost, torn, or damaged.
d. The processing of archives such as procurement documents and billing documents have not been computerized properly so that it is difficult to search and requires a long time at the Department Procurement of PT Dirgantara Indonesia. Using E-Archive now Web applications are connected localhost so that it can facilitate the management of records so that the management of records and search for archives is easier and faster.

Discussion
Based on the above conclusions, the researcher gives some suggestions that need to be considered for further development to be even better and this application should add new features that are more complete, such as display functions to be a bit dynamic and have full access in other departments that are more integrated.

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