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The First International Conference in Engineering and Technology Development




Universitas Bandar Lampung
20 - 21, June 2012
Lampung, Indonesia

PREFACE

The activities of the International Conference is in line and very appropriate with the vision and mission of the UBL to promote training and education as well as research in these areas.

On behave of the First International Conference of Engineering and Technology Development (ICETD 2012) organizing committee; we are very pleased with the very good responses especially from the keynote speakers and from the participants. It is noteworthy to point out that about 45 technical papers were received for this conference

The participants of conference come from many well known universities, among others: Universitas Bandar Lampung, International Islamic University Malaysia, University Malaysia Trengganu, Nanyang Technological University, Curtin University of Technology Australia, University Putra Malaysia, Jamal Mohamed College India, ITB, Mercu Buana University, National University Malaysia, Surya Institute Jakarta, Diponogoro University, Unila, Universitas Malahayati, University Pelita Harapan, STIMIK Kristen Newmann, BPPT Lampung, Nurtanio University Bandung, STIMIK Tarakanita, University Sultan Ageng Tirtayasa, and Pelita Bangsa.

I would like to express my deepest gratitude to the International Advisory Board members, sponsors and also welcome to all keynote speakers and all participants. I am also grateful to all organizing committee and all of the reviewers which contribute to the high standard of the conference. Also I would like to express my deepest gratitude to the Rector which give us endless support to these activities, such that the conference can be administrated on time.

Bandar Lampung, 20 Juni 2012

Mustofa Usman, Ph.D
ICETD Chairman

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Bandar Lampung,Indonesia
June, 20-21 2012

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Document Management System Based on Paperless

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Abstract—**Loss documents and the high cost of document storage space are a major problem often faced by many organizations at this company, especially for those who have large amounts of paper documents. Therefore, we need a proper solution with the help of information technology known as the Document Management System. With this system, the paper documents are converted in digital form and stored in a disk or other digital storage facility (paperless).**

Furthermore to the search, discovery, display, printing, distribution and even documents can be done virtually through computer networks. Security policy can also be applied strictly in the management of these documents, so the only party entitled to can access the document according to its designation. Protection against the document is done digitally, so that relatively more secure and easier to use.

Document Management System based on Paperless are effective and useful in an office to streamline in the process of documentation. The main benefit is that users can find needed information quickly, so it can help the process become faster, better, cheaper, and reduce environmental impacts (Green Computing). In this system of administration are routine operations performed by each individual in an organization or office activities.

Technology and administration without paper is the efficiency in the use of paper, especially in terms of paperwork and correspondence in order to achieve certain objectives in managing the administrative management system or the idea of a paperless office. This paper present a paperless model for the university management system. A survey has been conducted that enlisted some fundamental characteristics required to implement successful paperless environment.

Keywords:**Digital, Software, Paperless, Document Management System, Characteristics.**

I. INTRODUCTION

Administration of a routine operational activities performed by each individual in an organization or office activities. Formal administrative process related to the legal aspects as well as generally set forth in written official documents. Traffic documents, letters, notes, or memos between individuals or units of service can become very large so that also require greater effort. The document is an important part of an administrative job. The letter is essentially a form of ideas or the will of a person pouring it in writing.

In detail [12], the letter as meaning ;

- Statements will form one person to another through writing.
- A media outpouring of feelings, the will, mind, and aim for someone to be known by others.
- It's a form of description of an event or condition set forth in writing.

Those the letter is a bridge of understanding and communication tool for a person with another person. because it is so, then the letters should be drafted succinctly but clearly and firmly. the language used must be easily understandable, simple, and orderly. letter writer should think in advance what you really intended to write and realize to whom it is intended article, because through the letter means the author has to deliver and bring his ideas to others.

- Administration comes from the latin: ad = intensive, and ministrare = serve, help, meet. Administration in the Indonesian language understanding there are 2 (two): administration from the Dutch: "administratie" which is an administrative definition in the narrow sense, namely as office administration activities (note-recorded, typed, double, and so on). these activities are in english: clerical works (soedjadi, 2003).
- Administration in its broadest sense, is derived from english "administration", which is a process of cooperation between two or more people based on certain rationality to achieve common goals that have been determined [14].

Paperless technologyis the efficiency in the use of paper, especially in terms of paperwork and correspondence such as mail delivery may be replaced by electronic mail (email), cheaper, faster, effective and available 24 hours or a paper reduction policy in administrative activities. given the efficiency of these services to the community will be faster and unified (integrated).

Paperless administration is a cooperative process with specific goals without the use of paper [13]. paperless is a system created to manage the administrative management system. The idea of the paperless office (paperless office) started sticking in the late 90's. The philosophy is to use as little as possible and digitizing paper documents. The

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benefitsare increased productivity, cost-effective, efficient space and reduce environmental impacts (green computing).

Term of paperless office is already echoed a few years ago. Since advances in information technology and computers, people have other alternatives in the process and read the various documents. paperless office is a goal to get used to cultivate and to read documents in digital form, in other words reduce paper usage as a staple of writing as it is now.

II. Related Works

The concept of the paperless office actually has been coming a long time ago. The first concept was presented as a critique of the concept of management system based on written document. This concept states that the most rapidly in the next 25 years and a maximum of 50 years. The organization Max Webber wouldn't be used anymore, but people tend to use the paperless office in bureaucracy. As long as the development of information technology, the development of bureaucracy that carries a paperless office concept was developed [13]. Many technology experts who strive to make the concept of using information technology in activities of the bureaucracy, according to [13] many advantages that can be gleaned from the use of document management system based on paperless among other things.

In Previous work [2][4][6][10] shown that there are three objectives toachieved for implementation of a successful paperless system.First we must understand that how paper support currentoffice activities, Second what are the sources of paperproduction in current environment, Third what kind a hardwareand software technology are need to support equivalentpaperless environment.

Sallen& Harper [3] studied two organizations whichdoomed while going paperless. Their analysis shows thatproposed paperless environment introduced new businessprocesses which had eliminated paper but the new systemwas not as much supportive as paper-based system. Theyidentified some useful characteristics of paper such as easynavigation among documents, cross-referencing of multipledocuments and annotations on digital documents weremissing in studied systems.In [8] author presented an annotation tool namedPenmarkedfor assignment marking. They describeddocument flow from submission to grading. Penmarked wastested in an environment where every user has access to acomputer. Students submit programming assignments thatcan be written easily with a text processing tool.

Penmarked is a good tool for marking annotation onassignments which can be enhanced to other types ofdocuments. This aspect of Penmarked is directly applicablein our model.

Previous literature proposed someactivities which replaced some paper based activities suchas Penmark [8], iJITinOffice [7] and PapierCraft [9]. Theseproposed solutions provided contribution to the paperlessenvironment but they addressed only parts of the problem inisolation. Similarly only fundamental characteristics appliedto a single state were taken into account and thereinterrelatedness among other stages of life cycle wasneglected. This lack ness of interrelatedness ofcharacteristics created a disastrous effect in later stages oflife cycle as happened in case[3].

Plimmer& Mason [6] implemented paperless assignmentsand their marking procedures with the help of digitalannotation technique. With this technique student cansubmit electronic assignments, get results back from theteacher with annotation written electronically on theirassignments. A *preoperative risk assessment (PRA) form*was selected within a hospital environment [2]. Problemsbefore paperless PRA were incompleteness, storage andretyping of information for analysis charts. Paperless PRAsystem eliminated physical existence of PRA whichresolved the storage problem, validation checks in softwarepermits incomplete information and analysis created fromrecorded data was essential for decision making.

A document management system named *iJITinOffice*waspproposed by [7]. This system manages not only digital butalso handwritten documents and links them together in waythat both of them were searchable in interweaved fashion.Searching is performed by using two methods i) metainformation related to a document i.e. who wrote this andwhen it was written ii) backtracking the edition history ofthe document. Managing and tracking of the documents wasdone through an ID based method. Any modifications likeannotations were stored separately along with originaldocument in digital format. Document management is asubpart of our model, where this work can providereasonable contribution.

Infrastructure required for establishing paperless universitywas identified by [4]. Needs of a paperless systemhighlighted in this work were: Free use of Internet accessfor university employers and students both at universityand home; Computer networking facility within universitypremises; Employment of system engineer, data engineer,software developers and technical staff; support fromestablished computer companies; automation of academicactivities. Authors claim that a modern and diverseeducation system is a prerequisite for a successfulautomated system. All these identified needs are requiredfor our model except the complete change in educationsystem. Insufficient funding from Croatian Academic andResearch Network(*CARNet*)had not made this work areality.

III. Paperless Model

Our models are three tier architecture such as, electronic documentgeneration, electronic document management andelectronic documents sharing. As convenient shorthand, werefer to the tiers as document generation, documentmanagement and document sharing. Following subsectionshighlights an abstract view of our model and identifyinfluence of paper characteristics over each state.

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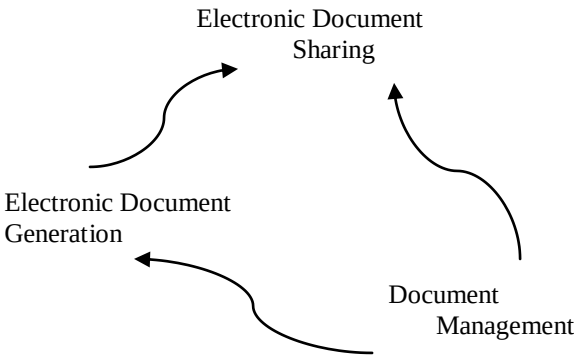

Figure 1.Reference model for paperless environment.

A. *Conceptual View*

The illustration in Figure 1 shows the model for paperless environment. The three states identified earlier(document generation, document management anddocument sharing) are shown interacting with each other ina cyclic way. Arrowhead represents document orinformation flow. Name of every stage is self explanatoryin itself.

In any paper-based system paper document flows in lifecycle represented in Figure 1. A paper document are created, managed and shared which in return produced moredocuments. Well established methods and technologies areavailable to support activities related to all three states, likemanaging papers in folders and sharing them physicallythrough post or in person.

Every stage of the life cycle is influenced by papercharacteristics stated. At documentgeneration stage the system to create document must posseinteractivity. While, document management system must has flexibility and accessibility. Where document sharingrequired mobility.

This life cycle can be easily converted to electronicdocuments by replacing activities involved in each state toits digital equivalent.

Our model is cyclic, so for a successful completion of acycle, any electronic document must maintain all thosecharacteristics which are required at underlying stage andforth coming stages of the life cycle. For example adocument that is required to be mobile, must be provided bymobility, accessibility and portability characteristics at itscreation stage.

IV. CASE STUDY

A paper document is a physical entity for writing or recording information usually intended to communicate. An electronic docement is an electronic media content.

There are several ways for investigating document related in academic activities such as Communication documents are mainly letters, notifications, office note etc. These documents are primarily used as a channel for information flow. They exist for short period of time and these are associated with current activities. Advertisement involves documents that are for public access for example prospectus, notices displayed on multiple noticeboards, meritlists displayed on website etc. Technological alternatives are required to display these documents in digital format.

Academic documents are typically used for conducting education, it include lectures, notes, assignments, quizzes and books. These documents can be transformed to paperless by introducing modern education systems like e-learning. E-learning has emerged as a solution to the distance learning but its activities are real example of paperless education system.

Survey at universities campuses shown that students only print documents which they had produced themselves. Students only read digital data such as articles from Internet, notes in electronic form and e-books and never take print of these documents. Only documents available at photocopier are replicated.

Text processing software is used to create and printdocuments. Separate folders are use to keep these printed documents and documents are shared by person or post. We can easily map this life cycle from printed documents to electronic documents.

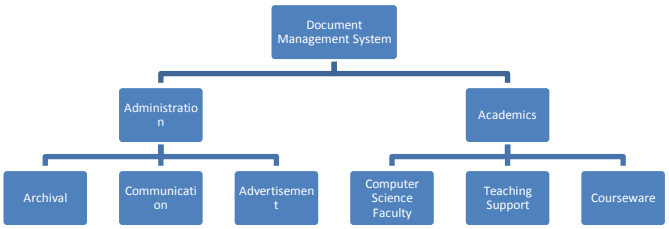

Figure 2.DMS Model

A. *Document Generation*

Our initial focus is on eliminating paper documents (e.g paperless); the first state Document Generation of reference model refers to creation of electronic documents. At this stage every paper document is converted to its digital equivalent by mean of using appropriate technology. We classified earlier our paper documents into two major categories Administration and Academics. Our model accommodates both types of documents by implementing a mesh of office automation and e-learning systems. We have Archival, Communication and Advertisement documents by further categorizing Administration. Primarily archival are some sort of data acquisition documents. The data recorded through these documents remain in storage space for long period of time for example student registration form, enrollment form etc. Automation software is required for handling such type of documents.

B. Document management

In current paper-based environment documents are createdand printed, these documents are kept in folders for maintaining record. Usually copy of a document was sent to a receiver. In reply to the received document a receiver follow the same cycle. In this cycle replication of a single document was performed at multiple places for example sender and receiver keep a separate copy of a single document for their own record.

V. CONCLUSION AND FUTURE WORK

As discussed before there are several benefits in the offer to use paperless, amongothers:

- Efficiency.
- Management of better documentation.
- Leisure better job.
- Supporting the better decision.
- Management is more controllable.
- Improving the image of the organization.
- Towards an eco-friendly Indonesia (go green).

The concept of "offices without paper" originated during the 1980s. The primary idea behind this notion was that the application of computers and computer networking would decrease the amount of paper used in office work. Today, this same concept is understood as the computerization of all office work. In a similar vein university without paper represents the promotion and employment of information and communication technology (ICT) in the overall scheme of activities in post-secondary institutions. ICT influences all aspects of human life, which includes both education and post-secondary institutions. It makes it possible for any type of information to be accessible to anyone.

Our model provided basics towards implementing paperlesssystem which will be the fundamental and realistic.Well established and commercial of the shelf tools andtechnologies are available for document generation,document management and document sharing activities butthey work in isolation for any individual activity. A singlesoftware unit is required which facilitate all the stages ofour model while preserving the fundamental characteristicsstated above except social characteristics which are relatedto reading activities but in our perspective these socialcharacteristics are not influential for business processes. In the future work this concept will be implement in the whole university environment.

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