

INFORMATION ASSET MANAGEMENT OF SNA COMPANY

by

Mr. Sanya Chinkaroon

A Final Report of the Three-Credit Course
CE 6998 Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer and Engineering Management
Assumption University

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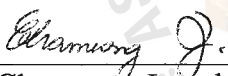
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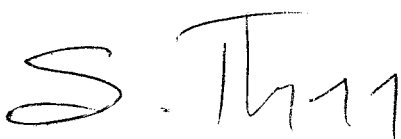
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ABSTRACT

This project is to improve the processes and to increase the productivity of information asset management in automotive industry. The obstacles of this project need to be eliminated by change their belief and provide friendly training and emphasized on security aspect. The information asset management system has been designed to improve the communication channel and sharing the information in automotive industry. The study procedure includes the old traditional transaction, new implement solution, network planning and network layout.

The scope of this project focuses on planning and information control section (PIC) of an SNA Company. PIC Section acts as a central information transfer media, who receives and update data from headquarter (Japan) and allows the assessment from many users that come from internal and external for checking in SNA's database. These can reduce access time to sensitive documents, sharing the information, reduce paper consumption and space storage requirements and making the users friendly. This solution also helps for other Thai automotive industry to use the solution compatible with the other foreign companies.

In the future, this successful study will be the prototype and direction to replace all paper workflow and traditional solution in automotive industry.

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Finally, I would like to express my deepest gratitude to my parents. Whenever I am tired or lose encouragement, they fuel great love, understanding and encouragement to my life.

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I. INTRODUCTION

1.1 Background

SNA Company is automotive manufacturing contributing to general economic growth, promotion entrepreneurship, producing cars for sales in Thailand and export and boosting foreign exchange earning particularly through exports of manufactured products. During high competitive situation, SNA Company need to develop their organization to compete with competitor. All computers of SNA Company are set as standalone computers and use with normal applications. SNA Company needs to be improving in communication channel such as engineering and design department, production department and vendor.

Information Asset Management Systems is an effective way of improvements and productivity increases through implementations of document management systems that simplify and reduce access time and enhance drawing and document integrity. Users can retrieve drawing and documents much faster from electronic systems than is possible with traditional, paper – based methods. Also, access to drawing and documents can be effected by a variety of methods involving content base retrieval techniques. Information Asset Management Systems can minimize paper use and ultimately reduce the amount of space required for storage and increase productivity.

This feasibility study of Information Asset Management System will identify the costs and benefits of new operation system in organization, which will help to improve their working process efficiency and also identify feasibility study in order to be the advantage before make decision either use existing system or opposed system. We provided the idea of Information Asset Management Solution that is suitable for SNA Company including the way to design the link and workflow between users and their required information

1.2 Objectives

The objectives of this project are to designed the Information Asset Management System for the SNA Company and suitable before make decision to improve the existing system within organization and each departments which includes:

- (1) To review and determining the Information Asset Management System characteristics.
- (2) To show the result of feasibility study to SNA Company.
- (3) To identify the suitable Information Asset Management Solution for Planning and Control Section of SNA Company.

1.3 Scope

The scope of this project included:

- (1) Developing the suitable Information Asset Management System and devices for Planning and Information Control Section of SNA Company.
- (2) Computing the workflow diagram and layout of existing system and proposed system of SNA Company.
- (3) Design hardware and software technology for planning the proposed system to the organization compared with the existing system.

II. LITERATURE REVIEW

2.1 Information Asset Management Systems

Information Asset management is not a single entity or technology but rather a combination of elements. It is the interaction of information and different users in a business process, combined with the technology that permits this interaction. This is why the term can mean so many differences to so many people. For years, Information Asset management systems meant imaging systems transforming paper drawing and documents into digital media. With most documents today being created electronically, the focus of Information Asset management systems has shifted from managing paper documents through Imaging Systems, to Electronic Information Asset Management Systems, where the electronic versions of the documents are stored and managed. Information Asset Management System focus on the control of electronic documents, document images, graphics, drawing processing files, and complex-compound documents throughout their entire life cycle (Nathan 1993).

The Information Asset Management System exists only to control and manage the document collection, and creating an electronic library of sorts. When viewed from this perspective, these systems are seen as just an overhead expense, not a mission critical application. The Information Asset Management System application must be seen as an enabling technology, one where the system is a means to an end, not the end itself. In any effort or project undertaken today that involves new technology, there had better be bottom line results or benefits that usually take the form of increasing revenue or a reduction in costs, measured by either a cost-benefit-analysis or return-on-investment. However this result is measured, the way to get there is to improve the productivity of the organization overall. Often times, improving productivity means putting in new technology to solve a perceived problem or fulfill an organizational need. Technology

permeates the workplace today as seen in E-mail, laptop computers, cellular faxes, and of course, Internet connectivity. Improving productivity in Automobile manufacturing and Automobile technology means improving human performance enabling people to do more with low cost and to do it better, faster, cheaper. Technology can be an enabler, but not the panacea predicted with each new wave. Each technology must be targeted at the correct problem, and people must become the masters of the technology in order for benefits to be realized. The formula for improving productivity is about striking a balance between people and technology, but the people must take center stage in this production enhancement process. When we set out to develop a new Information Asset Management System for an organization, it must add value by improving human performance. A system should be built to support users by providing them with the information, processes, tools, and training system need to accomplish their jobs. A system which delivers the correct information to the right person, at the proper place and time (William 1993).

A document and drawing is a container, which brings together information from a variety of sources, in a number of formats, around a specific topic to meet the needs of a particular individual. To summarize, we have identified the need for the following high-level of Information Asset Management System requirements:

- (1) User focused
- (2) Collecting, Storing, and Managing of Drawing and Documents
- (3) Distributing and Delivering Drawing and Documents to a User

For an Information Asset Management System to be truly effective, it must support the business goals and objectives of the organization. The Information Asset Management System can accomplish this goal by focusing on the user.

2.2 History of Information Asset Management System

In the last seventies and early eighties, the information systems departments saw a shift from large central mainframes to distributed PCs on the desktop. This shift moved control of information systems and resources from a highly central organization to a widely distributed one, which created numerous problems for the IS organization as well as the lines of business where these PCs were deployed. IS organizations were forced to modify the way they operated to adapt to this changing environment. The introduction of LANs has changed the balance of central versus distributed systems again. The LAN made desktop computing a greater productivity-enhancing tool.

Networks have grown dramatically because of improvements in networking power, performance, and price. People have learned to exploit the advantages of a network by sharing files and using new technologies such as Email. The most common ways are by establishing a common operating systems environment so that each machine is configured in a similar fashion with common hardware, software, and networking connectivity. This greatly simplifies support. A second strategy is to move toward the use of application servers, where all typical desktop applications are loaded from a server at execution. In this fashion the IS team is re-centralizing some functions to regain control. In the period of the late 1980s and early '90s, users had a greater desire to access and share structured data. This led to the next major wave in information technology: client-server. This approach allowed for a division of computing power between the desktop, or client machine, and the server. This was a balance of central and distributed resources. The client or server could be made fatter or slimmer depending upon the environment in which the application had to run. Finally we reach today, when the hottest trend in information technology is the Internet and World Wide Web. There are also hundreds of thousands of servers on the Internet right

now, offering the ultimate client-server model of computing. In fact, leading edge Web technologies, such as Java, JavaScript, and ActiveX, where applications are stored on a server and then simply downloaded and executed on a client's machine, are trying to leverage the power of the desktop PC even more. So any claim of moving back to the mainframe era is probably overstated. The diagram in Figure 2.1. illustrates the history and cyclical nature of computing and networking technologies over the last twenty years (Bielawski and Jim 1997).

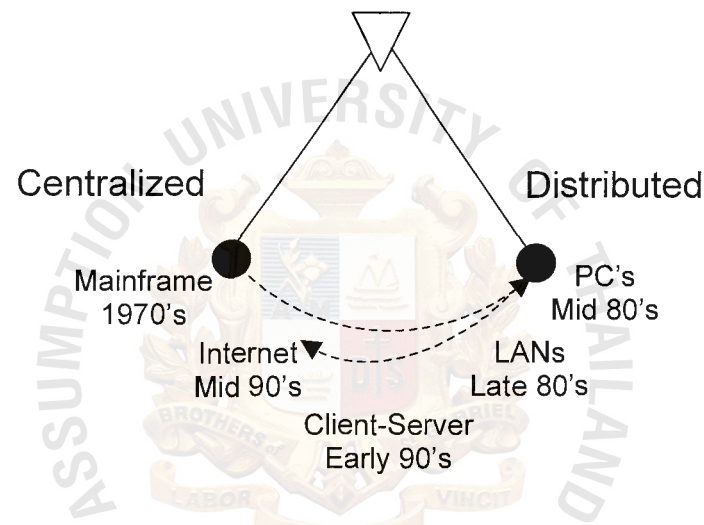


Figure 2.1. The History and Cyclical Nature.

Networking improvements also brought more capability to the individual users. In many organizations, particularly where the administrator had become a bottleneck, the introduction of the LAN was heralded as a productivity breakthrough. As always, the improvement was a double-edged sword. By removing the choke point, the control mechanism was also removed. This was the beginning of the end for controlling documents, and a degree of document chaos followed. One of the most radical changes that networking brought to the business context was Email. Email fostered the concepts of information sharing and informal communication. This technology began to change the way people worked together. At the same time, applications became more powerful

and easier to use as hardware performance improved. These enabled a whole new class of users to create and publish their own documents. Email systems became a mechanism by which to share and distribute this information. While this offered another leap in personal productivity, it was also another step deeper into document chaos.

2.3 Need for Information Asset Management System

Information Asset Management System is actually all three of these elements. The total spectrum of Information Asset Management System deals with the creation, management, and distribution of document-based information. The impact, and therefore the deployment of related systems and tools to address each of these major elements, will vary with the organization as a whole, as well as within various departments.

There are three major reasons that corporations so concerned with the information asset management issue:

(1) Information Asset Sharing:

To improve productivity, In examining the way they do business, they are quickly recognizing the need to share information asset widely throughout the organization. When the pace of business was measured in years and months, paper did the job. It was the lowest common denominator, and everybody could use it at relatively the same level of effectiveness. But as the pace of business has accelerated, so has the need to share information asset. Paper is too slow a medium for such purposes. More and more businesses need information now. With more than half the information in an organization created electronically, there is a mandate to share it electronically. The organization ends up with the situation where engineering can't share with manufacturing, and the research and

development can't share with the Spec control section, etc. This results in working without all of the information that's available, which of course leads to negative outcomes. One possible result is that actions are taken or decisions made with less than optimal information.

(2) Managing Information Assets:

In many organizations the majority of electronic documents are scattered across floppies, local hard drives and LAN file servers. They are not organized, structured, or even cataloged. Often they cannot be found by anyone except authors, and only if they have good memories for file names. There is rarely any security for changes, backups, or disaster recovery, leaving these valuable resources uncontrolled. To understand the magnitude of this problem it is important to consider what these documents represent, or what they contain. In many organizations, writing it down into documents preserves much of this information. They represent the sum total of information asset within the organization. These information asset become the foundation for training, procedures, guidelines and many other activities involved in improving business processes, and the documents become invaluable because they contain the skills, processes, data, information, and collective information asset that would take considerable effort to relearn from scratch. It is difficult to quantify the value of these documents explicitly.

(3) Support Knowledge Workers:

The changing of organizations to meet the more globally competitive environment has led to developing knowledge workers individuals with the skills, capabilities and the information necessary to complete tasks with

little supervision. The days of autocratic, highly supervised, low-decision jobs are, in large part, gone. As this global competition has heated up the middle layers of management and supervision have been eliminated. Workers are left to their own devices. By properly enabling workers with the right information (usually in documents) and by adding some greater level of training, these knowledge workers can become experienced enough to make their own decisions. In order to effect this level of change, workers in every job are expected to have easy access to accurate and up-to-date information. With the majority of information on lists, product specifications, operating procedures, decision guidelines, etc. residing in documents. The need for a document management system is clear (Bielawski and Jim 1997).

2.4 The Benefits of Information Asset Management Systems

Having looked at the need for document management, we now turn to the benefits that can be expected from Information Asset management systems:

- (1) Lower Cost of Document Creation and Distribution
- (2) Improved, Customized Access to Documents
- (3) Faster Document Creation and Update processes
- (4) Increased Reuse and Leverage of Existing information
- (5) Better Employee Collaboration
- (6) Reduced Cycle Times in Document Centered Processes
- (7) More Complete Regulatory Compliance
- (8) Refined Managerial Control and Reporting
- (9) Enhanced Document Control and Security
- (10) Improved Productivity / Reduced Headcount

(11) Better Customer / Client Satisfaction

The first major advantage includes lower production costs for information products defined in terms of both money savings and reduced time investments for individual staff members. Also, online distribution removes the most expensive part of the print publishing process itself, which is the need for expensive paper stocks. Another advantage of the paperless distribution model is ease of access and maintenance. Electronic documents can be presented in several different forms or listed in custom tables of contents based upon user needs or the context in which the document might be used. However, put that same document collection on a single file server and allow everyone to look at that one copy and it can take that everyone will be using it.

Information Asset management systems can also become a document production and distribution system, even if the final product remains in paper. When all documents are properly cataloged and indexed, this provides the means to quickly and accurately find the desired information. This not only reduces the time spent searching, but the time spent re-creating it if it was not found. More importantly, if information in a usable form can be located quickly and easily people in cross-functional teams can better share and collaborate, doing the things that add the most value, rather than simply shuffling electronic files back (William 1993).

2.5 The Problems of Information Asset Management Systems

There are, however, several serious problems in implementing Information Asset management systems, such as:

- (1) Online Distribution without Document Control
- (2) Non User-Focused Products
- (3) Poor Information Organization

- (4) Information Overload
- (5) Difficult Document Control
- (6) Poor Technology Infrastructures (such as networks)

But the most serious risk to Information Asset management systems is that it will only be partially implemented. With so many benefits from the online distribution of document-based information, and the relatively low cost of related tools and technologies such as the Web, organizations often look at only this one aspect of the overall issue. They rush headlong into putting documents online and providing access to them, while the creation and management aspects are ignored.

Another problem is that Information Asset management systems is driven by the documents or technology and not by the end users. This can result in a system that will greatly increase training costs and require more support since users will have to be taught how to use it, it won't be intuitive to them. This can lead to further acceptance problems. Many systems have died at the implementation stage from not adequately addressing the users' needs up-front that from a poor implementation plan.

A very common problem with these types of systems is information overload. The number of drawing and documents in an organization is already overwhelming, but just making them electronic will not help. Careful organization and presentation of these materials is very important. Focusing on the user, and not forcing them to wade through lots of unimportant information to complete a task, is crucial (Nathan 1993).

2.6 Cost-Benefit Analysis

"Cost-benefit analysis" is a tool for systematically developing useful information about the desirable and undesirable effects of programs or projects and being a practical way of assessing the desirability of projects, where it is important to take a long view and a wide view. This is a tool for decision-making aid that will often generate the

information necessary to determine whether a given activity is desirable or whether it constitutes a waste of resources.

In particular, we are interested in determining which project or program effects are efficiency benefits and which are efficiency costs. The efficiency benefit of a project is the value of the products and services provided by that project, whereas the opportunity cost of a project is the value of the products and services foregone as a result of the project. In both instances, “value” is measured by individuals’ true willingness to pay for the goods and services involved. There are many criteria that appropriate for evaluating alternative investment projects by used these methods (Blank and Anthony 1998):

(1) Net Present Value (NPV)

NPV uses a discount rate determined from the company’s cost of capital to establish the present value of a project. The discount rate is used to determine the present value of both cash receipts and outlays.

(2) Return on Investment (ROI)

ROI is the ratio of the net cash receipts of the project divided by the cash outlays of the project. Tradeoff analysis can be made among projects competing for investment by comparing their representative ROI ratios.

(3) Break-even Analysis (BEA)

BEA finds the amount of time required for the cumulative cash flow from a project to equal its initial and ongoing investment.

2.7 Types of Benefits

Many benefits will be happen after implement the opposed system such as speed of workflow of transaction, time to market of product launching that can be another kind of opportunity benefit. Customer satisfaction also being the benefit that user will

get from the proposed system. If the new system reduces the amount of paper and printed drawing, that should also be reflected as savings in the part of file cabinets, office space, reduce the staffs and time consuming for searching the document from the files. Accuracy for document that users required also is the important factor that user should recognize (Hoffer and Joseph 1999).

(1) Tangible Benefit:

Refer to items that can be measured in money and with certainty. Tangible benefits might include reduced personnel expenses, transaction costs, or higher profit margins. Not all-tangible benefits can be easily quantified. Most tangible benefits will fit within the following categories:

- (a) Cost reduction and avoidance
- (b) Error reduction
- (c) Increased flexibility
- (d) Increased speed of activity
- (e) Improvement of management planning and control
- (f) Opening new markets and increasing sales opportunity

(2) Intangible Benefit:

Refer to items that cannot be easily measured in money or with certainty. Intangible benefits may have direct organizational benefits such as the improvement of employee morale or they may have broader societal implications such as the reduction of resource consumption.

- (a) Competitive necessity
- (b) More time information
- (c) Improved organizational planning
- (d) Increased organization flexibility

- (e) Availability of better information
- (f) Faster decision making
- (g) Information processing efficiency
- (h) Improved asset utilization
- (i) Improved resource control
- (j) Increased accuracy in operation
- (k) Positive impact on society

2.8 Types of Costs

Project costs can have both tangible and intangible costs. Tangible costs refer to items that you can easily measure in money and with certainty. Tangible costs include items such as hardware costs, labor costs and operational costs such as employee training and building renovations. Intangible costs are those items that you cannot easily measure in terms of money or with certainty. Intangible costs can include loss of customer goodwill, employee moral or operational inefficiency (Blank and Anthony 1998).

(1) One-time Cost

Refer to those associated with project initiation and development and start up of the system such as system development, new hard ware and software purchase, user training, site preparation and data conversion.

(2) Recurring Cost

Refer to those costs resulting from the ongoing evolution and use of the system that included:

- (a) Application software maintenance
- (b) Incremental data storage expense
- (c) Incremental communications

- (d) Supplies expense (for example paper, electricity)

2.9 Intranet Technology

Organization can use Internet networking standards and Web technology to create private networks called Intranets. Intranet is an internal organizational network that can provide access to data across the enterprise. It uses the existing company network infrastructure along with Internet connectivity standards and software developed for World Wide Web. Intranet can create network application that can run on many different kinds of computers throughout the organization. The difference between the Web and intranet is that whereas the Web is open to anyone, the intranet is private and is protected from public visits by firewalls that being the security systems with specialized software to prevent outsiders from invading private networks. Intranet requires no special hardware and can run over any existing network infrastructure. Intranet software technology is the same as that of the World Wide Web. Intranet uses HTML to program Web pages and to establish dynamic, point and click hypertext links to other sites. The Web browsers and Web server software used to Intranets are the same as those on the web. Simple Intranet can be create by linking a client computer with a Web browser to a computer with Web server software via a TCP/IP network. A firewall keeps unwanted visitors out (Nathan 1993).

2.10 Server and Network

On the network, the server provides the client with service and might be anything from database storage to another desktop computer. Server store and process shared data and also perform back-end functions not visible to users such as managing network activities. Server also being the component that satisfies some or all of the user's request for data and functionality and that performs back-end functions not visible to users such as managing network activities (Evans 1996).

2.11 Application Specific View and Documents

Application specific view mostly invested by the users in information technology based on the specific need of specific job's requirements. The application specific view allows organizations with limited resources to concentrate on solving their most immediate problems. Mostly organization that invest in these systems, hope to coordinate with company capabilities or limited ability of control of overall organization and overall strategic goal of organization. In the part of document, that was used to present the document you saw on the screen. HTML has been successful for several reasons such as HTML documents are small and therefore easy to transmit over a network and also not fix to any specific platform, so servers and clients alike can be running on any number of operating systems. The HTML format is more or less a public standard that has spawned tools from a variety of companies.



III. AN EXISTING SYSTEM

3.1 Overview of an Existing System

The automotive industry is attractive source of economic development and job generation and technology development are determined to ensure that other company share and participate in the benefits from producing as well as from using motor vehicles. These makes to necessary to use locally produced supplied parts, components, and even subsystems for them. In the automotive industry today, in order to be competitive, working fast and effectively, including gathering and analyzing data accurately are extremely important. Automotive industry need adopt information technology to facilitate and accommodate the way of workers in the organization work. Information Asset management systems helps workers in the organization cooperate and communicate with business partners, suppliers, customers and other related organizations more effectively.

SNA Company is an automobile manufacturer that design, research and development, produced engine and assembly the car. Recently, planning and information control section (PIC) of SNA Company, all activities of this section done by normally because they lacks of knowledge of Information Asset management and have no pressure to be leader of technology development. But now, most companies develop and issue technical documentation to vary from company to company. Other companies also document their own manufacturing operations, processing operations, and quality control produces. Including of production is expanding; therefore, information asset management is required to control production management and necessary documentation due to continuing growth and new order technology requirement. The types of information that comprise the technical documentation could module internally generated drawing, microfilm, drawing specification, part lists,

blueprints, memo, and vendor manuals (Figure 3.1). The source of these items might also be diverse; the information could come from dealers, suppliers, subcontractors and other organizations. SNA Company need to pay the budget about 3 million bath and more for get the new Microfilm machine that only get the copier function. That is not reasonable price when compare with currently technology that can support all of need in automotive industry. So, SNA Company try to finding the new solution that can solve this problem and can satisfy their need that can get value added from proposed system.

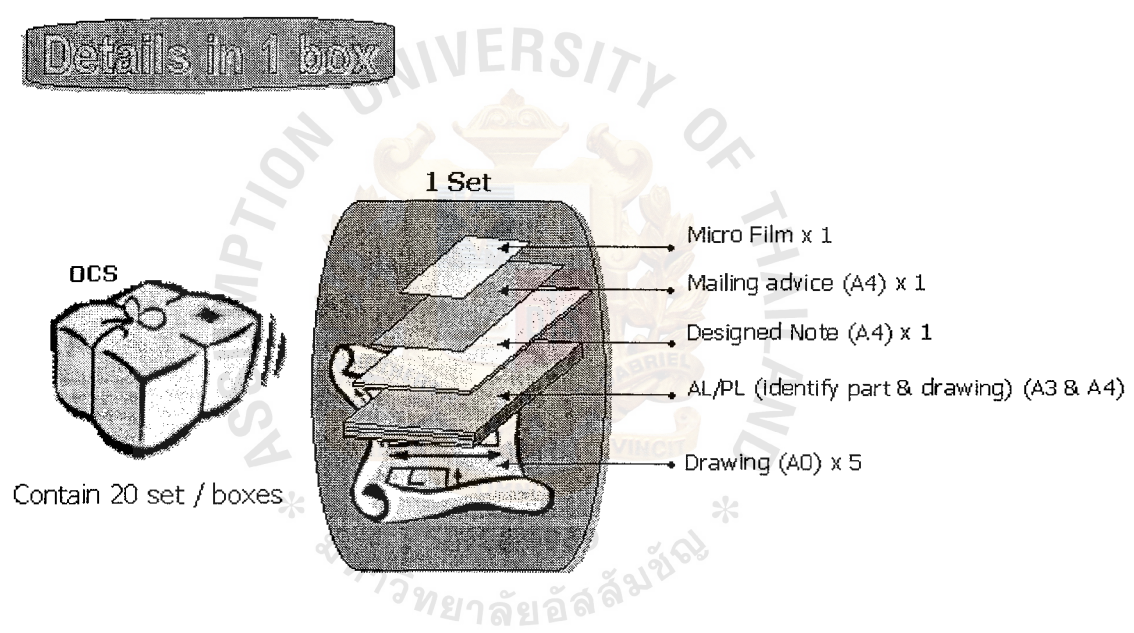


Figure 3.1. Details of Document in Delivery Box.

3.2 An Existing System Function

All existing system functions are manual and there are many documents and drawings in the processing and more staffs are needed for support such as checking, sorting, filing, searching and other. Information Asset Management is not a new concept because it has existed in almost every organization for a long time, but this organization may not know that, what they are doing comes from the same concept as Information

Asset Management. From the past, manual operation is no longer suitable for current situation. Loaded work causes delay process, which reflects unavailable on time. Information and also any mistakes can happen all the time. Specially, for Automobile Industry, the secret of each drawing is the main points that each manufacturing needs to focus and control by reliable system. They need to control the revision of each version for easy to develop and control the quality of manufacturing standard and easy to control in the field of technology development.

The location for storage existing document consists of two rooms (The size of location will calculate into square meter) as shown in Figure 3.2.

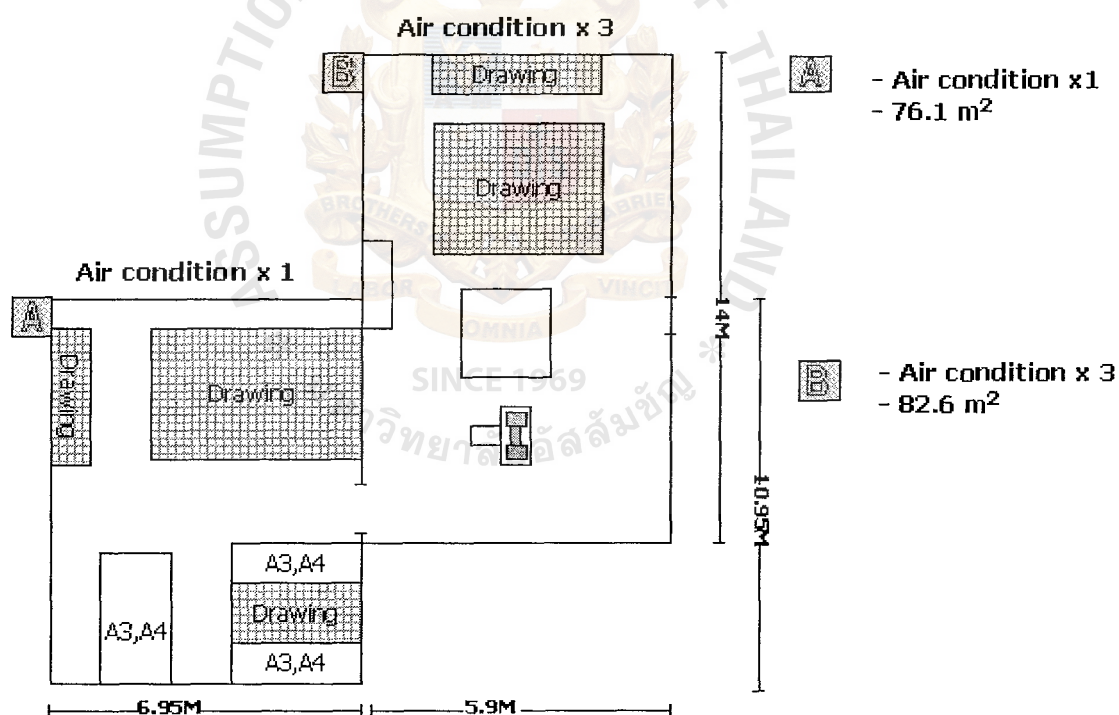


Figure 3.2. Picture Current Mapping & Area.

In room A, it contains of one air condition and a lot of cabinets for storage A3-A4 document and drawing A0 or larger. There is no any staff for working because this

room collected only the original file for being the back up database and prepared for produced the spare part of old model. Document A3-A4 and drawing in this room is not often requested from other department and asking for use because it is document of terminated series for production but needs to keep for being original of spare part when service center and dealer requests for.

In term of document A3-A4, contains the details of part list, details of each parts, the name of original vendors and code of materials. Drawing A0 and larger contain the structure of engines, body and other details that classify into dimension, size, proportions, capacity and so on. By policy, SNA Company still keeps each of model at least 10 year for services the parts and information for R&D department for research.

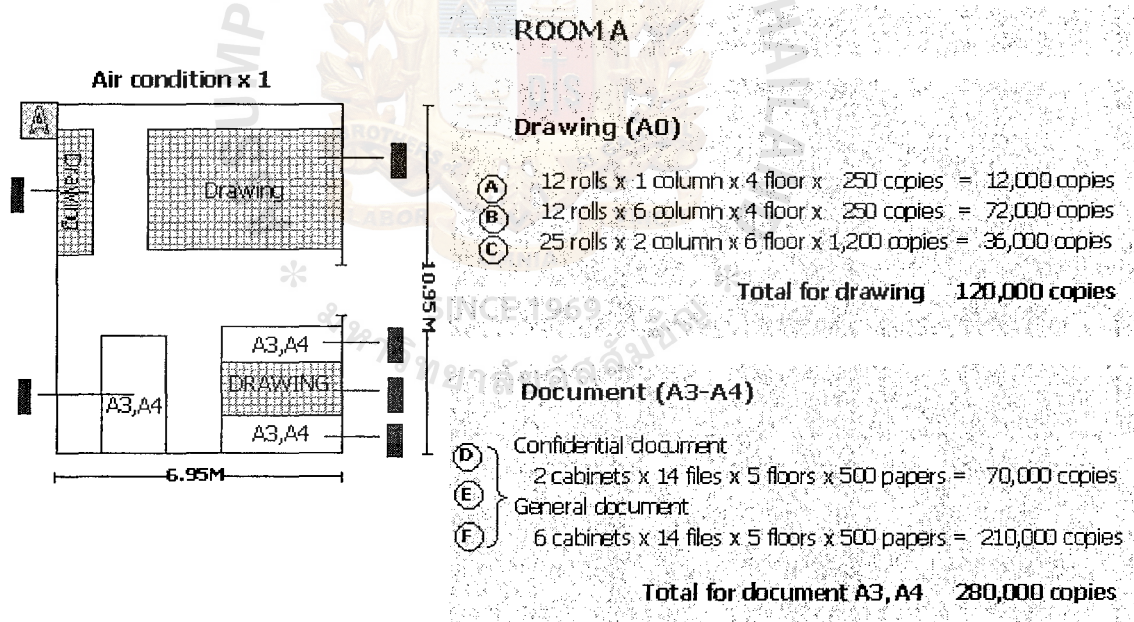


Figure 3.3. Details of Room A.

In room B, it contains of one personal computer and one printer, three-air condition and a lot of cabinet. Room B is bigger than the room A, because there are 4 staffs that work in this room and also used it to keep for the new model original that is

often requested by other departments. Production department, Research and development department and others that related with will contact at this room. SNA Company keep the new original's model from now until 5 years model release for easy to searching and service to other departments. Personal computer has no benefit for PIC Section in my aspect because of having no network communication that can facilitate to others. No one can used that database to be useful information for other jobs because they can not link and access into them. Mostly spaces of this room collect only the drawing, and not emphasized on document A3-A4, Document A3-A4 still keep in one place that storage in room A. Figure 3.4.

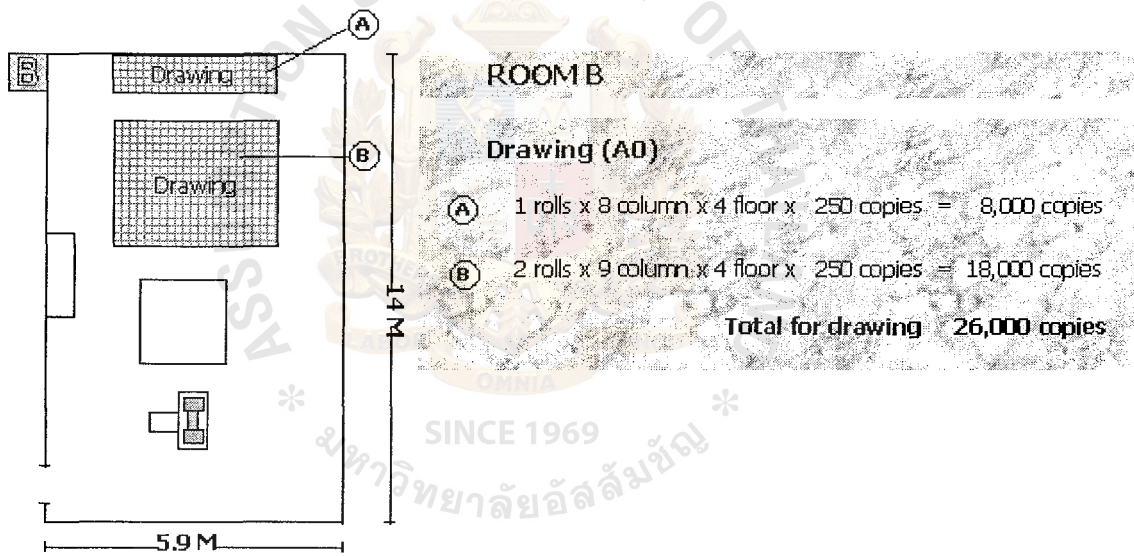


Figure 3.4. Details of Room B.

So, both of rooms consist of document A3-A4 and drawing A0. The total sum for document A3-A4 is 280,000 copies and total sum for drawing A0 is 146,000 copies. All of documents and drawings are kept into files and cabinets by using the manual indexing system as same as the library system but being lower level than it is. Because the information is not collected uniquely, it wastes time to find it. SNA Company's staff

use the method by their own knowledge and experience in classifying and indexing them. The document A3-A4 collect the information of mailing advice, design note and the rest. Manual indexing system of SNA Company marked in each of cabinets such as A00001-B01001 or drawing 00001A- drawing 00001B and etc. In room B, There are the old microfilm machine which is currently out of order and the big table to be used in classifying and sorting the drawing.

SNA Company is the automotive industry that uses the traditional process for storage and control information. Planning and Information Control Section (PIC) have used to deal with A3 & A4 document and drawing A0 or larger by manual processes for 15 years. Planning and Information Control Section (PIC) have four staffs to be responsible for the huge of document and drawing and they need to cope with a lot of documents for entry in each day (Figure 3.5). There are one manager, one supervisor and two staffs to control all of valuable information of SNA Company. Manager will cooperate with other departments such as inform the new model information to related department and other sections, cooperate with R&D department when they need to change in some details of each original drawing. Manager needs to approve the request of modify and rewrite drawing and approve for request of demolished process and the rest. Supervisor has the function of checking and marking after the sorting the entry's document. Supervisor needs to be careful in this step because it can be the way of uncontrolled in some secret of drawing that may lost or miss in some drawing of original. Supervisor also helps in other function that can save time and reduced work loaded of their subordinates. Two staffs have the function of manual sorting, storage, classify and send the drawing and document to other department for register and make the copy for distribute to the rest sections. They are also responsible for work of searching and filing, if being requested from other departments. They spend a lot of

time in each process such as 8 hours classifying new document's entry and 4 hours for storage them excluded other works. The following information is the details of process that already exist in this company by classifying into these processes. Figure 3.5.

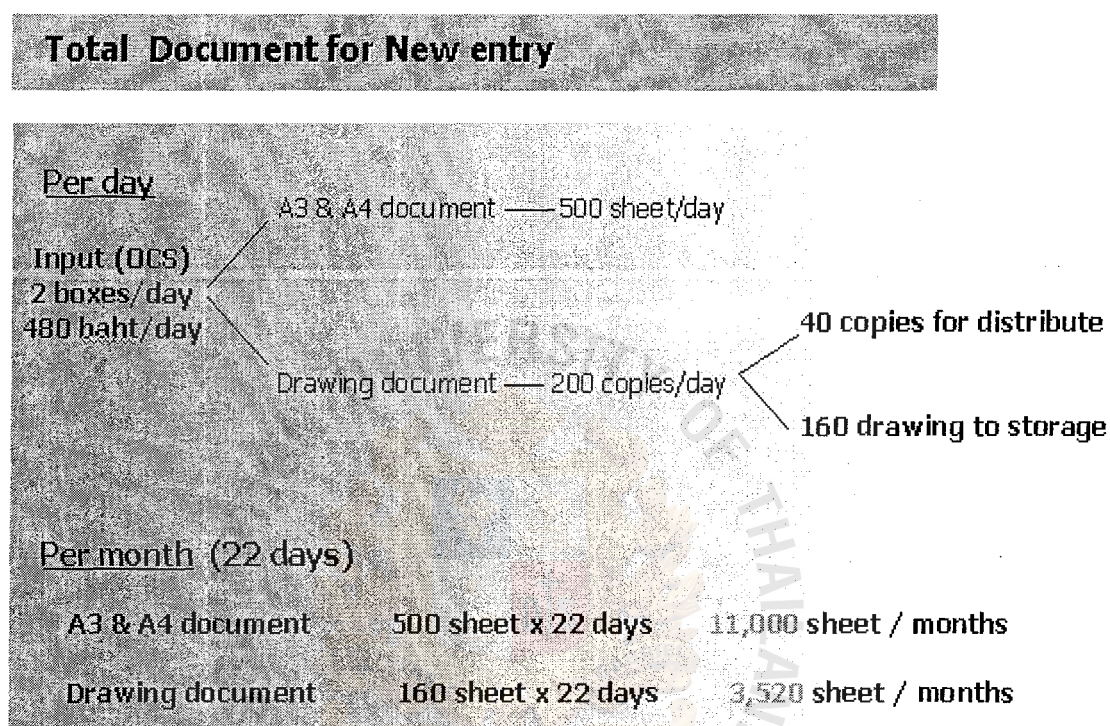


Figure 3.5. The Total Document for New Entry.

3.2.1 Processes of PIC Section for New Document's Entry Clearing

The current processes of PIC Section for new document's entry clearing is shown as flow diagram in Figure 3.6.

The steps of the flow diagram of PIC Section for new document's entry clearing are described in detail as followings:

- (1) The process begins from the delivery boxes to be sent from the head-quarter in Japan to SNA Company by air (OCS Delivery) at least 2 boxes in each day.

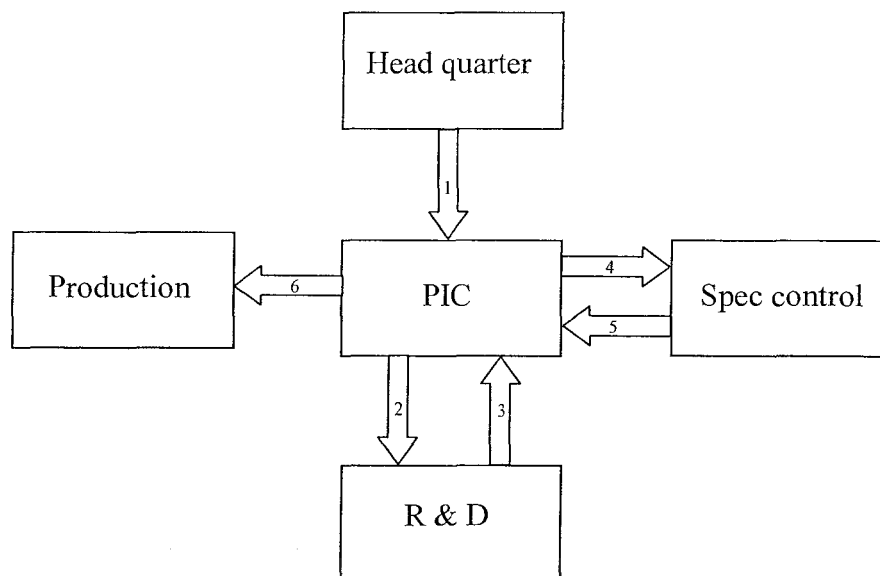


Figure 3.6. The Flow Diagram of New Document's Entry Clearing.

- (2) After PIC Section receives the delivery boxes, staffs will sort the document by manually on the big table. Supervisor needs a lot of time in checking documents before sending the list of checking to R&D Department.
- (3) After R&D Department checking and record the number of drawing that SNA Company received, R&D Department will approve the list of checking and send it back to PIC Section.
- (4) PIC Section will register the list of document and select the drawings which have been already approved by R&D Department to be sent to Spec Control Section.
- (5) After the drawing is received, Spec Control Section will approve each drawing to confirm the revision before using them to be the original of production and send it back to PIC Section to store them into file cabinets.
- (6) PIC Section will send the information letter and list of drawings to the production department. Production department will classify the drawings in

terms of internal production and external production. Production department will send the lists of external production to each vendor.

3.2.2 Processes of Vendor and Production Department for Request Document

The current processes of vendor and production department for request document is shown as flow diagram in Figure 3.7.

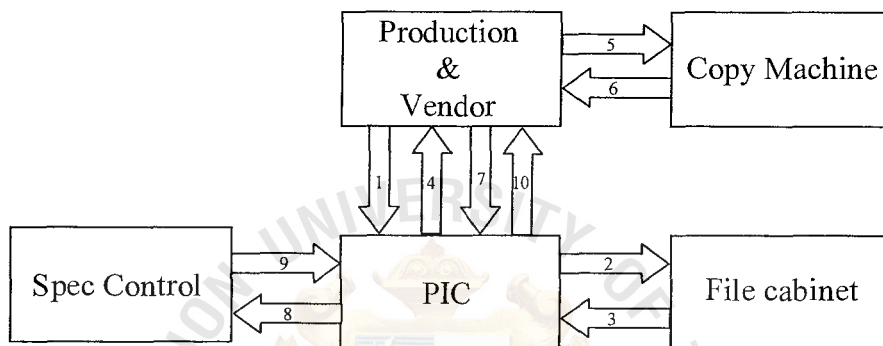


Figure 3.7. The Flow Diagram of Requesting Document.

The steps of the flow diagram of vendor and production department for request document are described in details as followings:

- (1) The process begins from request of the vendor and production department to PIC Section, for mailing advice, design note, identify note and drawing.
- (2) After PIC Section receives the request, staff will send the request document to manager for approval and search the specific document in file cabinets.
- (3) PIC Section will record the number of drawing before bring them out from storage room.
- (4) Then send them to the vendor or production department, and record the name of vendor or the name of worker in production department.
- (5) Vendor or production department duplicates the document and drawing from outside of factory.

- (6) After they get the document requested, vendor or production department need to go back to the SNA Company.
- (7) Send the original documents and duplicated documents back to PIC Section.
- (8) PIC Section will send the duplicate document by including with the request letter to Spec control for approval and control the revision.
- (9) Spec Control will approve the details of document and recheck the revision before sending them back to PIC Section.
- (10) Finally, the vendor or production department receives the request document.

3.2.3 Processes of R&D Department for Up-date New Details of Document

The current processes of R&D department for up-date new details of document are shown as flow diagram in Figure 3.8.

The steps of flow diagram of R&D Department for up-date new details of document are described in detail as followings:

- (1) The process begins from the request of R&D Department to PIC Section for up-date the details of documents.
- (2) PIC Section will search the documents related with request of R&D Department to send it to Spec Control Section.
- (3) Then selecting the required document from the file cabinet.
- (4) Send them all to Spec Control Section for either use “checking” or “revision” they have the same meaning revision.
- (5) Spec Control Section confirm with R&D Department in each part of document.
- (6) R&D Department approves the lists of up-date document and number of revision.

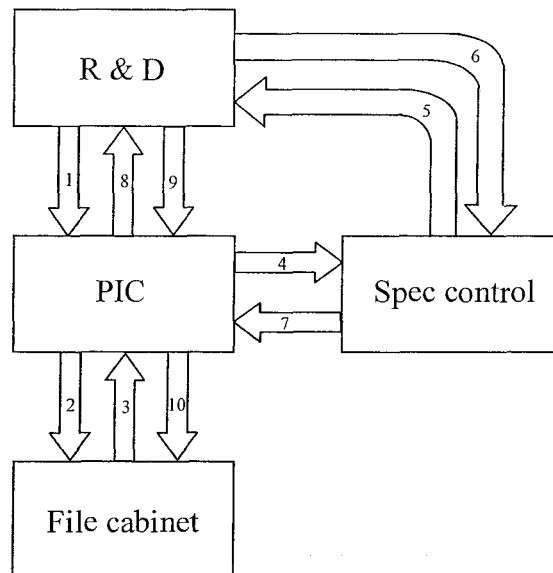


Figure 3.8. The Flow Diagram of Up-date New Details of Document.

- (7) Spec Control Section permits PIC Section for release the original document to R&D Department for up-date.
- (8) PIC Section find the request original document and send R&D department.
- (9) R&D Department up-date the information in original document and send them back to PIC Section.
- (10) Record the latest document and keep them in the file cabinet.

3.2.4 Processes of PIC Section for Demolish the Obsolete Document

The current processes of PIC Section for demolish the obsolete document is shown as flow diagram in Figure 3.9.

The steps of flow diagram of PIC Section for demolishes obsolete document are described in details as followings:

- (1) PIC Section will check the capacity of the storage area compare with the currently document by base on yearly of storage.
- (2) PIC Section will get the number of documents and series of part that already

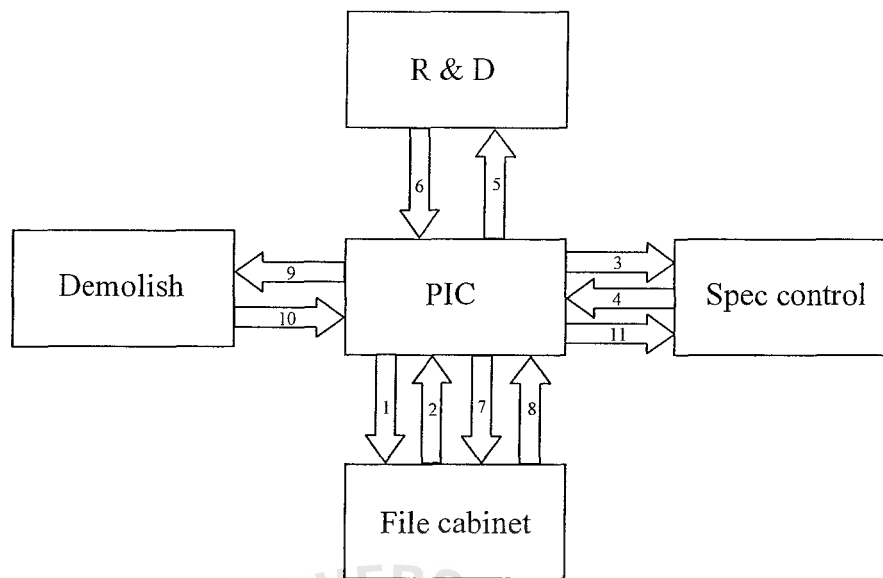


Figure 3.9. The Flow Diagram of Demolishes Obsolete Document.

obsolete. They desire to demolish them and list them into the request letter for get approve from Spec Control Section.

- (3) Send the request letter to Spec Control Section.
- (4) Spec Control Section check the revision and series that headquarter confirms for terminate and approves follow the request of PIC Section.
- (5) PIC Section send the request letter and enclose with approved document of Spec Control Section to R&D Department for get confirmation.
- (6) R&D Department checks and confirms back to PIC Section.
- (7) After PIC Section received the confirm document, staff will search the document follow the list.
- (8) Re-check again by supervisor of section.
- (9) Send them all to staff to demolish.
- (10) Report back to the supervisor and manager after fulfilling the process.
- (11) After approved by PIC manager, send updated list to Spec Control Section.

3.3 Problems of the Existing System

The following are the major problems from the existing system.

3.3.1 With the radical and incessant development of technology, to stay competitive in Automotive Industry, energy technologies and tool in SNA Company it needs to continuously develop and adopt the new technology into organization. However, everyone cannot study every new technology because it depends on the policy of company and vision of coworker and also depends on economic situation.

3.3.2 With the increasing importance of the technology development in automotive field Know-how knowledge and information becomes the asset that is worth investing. Competitive of Automotive industry tries to know the dynamic of other competitors to cope with the new challenge from the new model of designed. To remain competitive in Automobile industry, SNA Company needs to retain the current information adding up with new arrival of information to make them to the powerful information to produce the product for increase competitive and reduce time to market for grab attention of target group and change from target group to be the users.

3.3.3 Because of the limitation of technology of workflow, many steps in each process and a lot of time consuming in each step it can be the reason that makes many projects to be delayed in some processes and increase many lead time to other processes later. That should be reviewed or solved by everyone related. These delays can cause the company to lose the profit from the job and lose the position of leader in automotive field.

3.3.4 The current filing system is still not effective due to the manual system. The department can not arrange a good filing system and there is no control system that can make sure of its accuracy to control the out put and revision of each drawing. No workflow system that can fully support all the operation that makes work load in the

department and also lead to inaccurate information. While the business is growing rapidly, it needs a powerful, efficient and effective operation to support and the current system may no longer be suitable.

3.3.5 Unavailability of timely information makes a lots of complaints arise from other departments when the processing of information is too late. Too much work in the area and the expanding business turn the company requires more timely information. Therefore, with the current manual system operating it is very difficult to support all information within the time frame.



IV. THE PROPOSED SYSTEM

4.1 Proposed System

The information asset management system integrates information technologies used for facilitating the organization and distributes information between employees in the organization and outside of the organization. It also increases powerful operation processes and get more effectiveness in all operation sections. The proposed system can reduced workload and also provides advantages in their current system such as time saving, cost saving, communication improvement, flexibility, and prepare for compatibility with technology in the future and the rest.

Information asset management is inexpensive way for company to experiment with the technology and can make benefit from this system. These systems can provide the means for exploring information asset management and designing or restriction workflow. The proposed systems can transform complete paper storage to electronic by saving original document with graphics, photo, handwritten data or signatures for contract and other legal purpose. Document retrieval should be provided to access to the same information by multiple users and control the security by protecting the database from unauthorized users based on IP addresses or usernames and passwords. Information asset management based on Intranet application and opens the host computer to a wide community of users. Database server should be secured from undesirable programs that can access from the host computer by configured the protection in the database server. These proposed process required the additional of stand-alone proprietary systems and extensive staff training. Information asset management system is no single technology that fill all the criteria required for completing the total. The following section will discuss about the specific technologies

that play important role in an organization under Information asset management environment.

(1) Image Capture

Input devices for image capture is scanner, which produces an asset similar to of document, including drawing, text, and hand written information, Scanners recognize the image (text, photo, or drawing) on the document is composes of pixels, or dots. Users need not always capture the full resolution of information. They can reserve high quality scans for professional reproductively in these substantial disk space. The scanner come with application specific view that permits user to edit acquired images by cropping, focusing and rotating. In additional, user can adjust acquired image for brightness and contrast or draw on to highlight important areas. The contents of a document can be stored in ASCII format or contented directly into a word processing format. The text can be stored, editing, or merged with existing files.

(2) Storage Device

After document and drawing have been scanned, they must be moved to a storage facility from which they can be retrieved as needed by multiple users. The scanned files must be moved from the scanner to the server on Intranet network. Personal computer can be added to the server using relatively Intranet with a dedicated server that provides access to image files stored on optical disk such as hard drive and CD-Recordable that provides a cost-effective and standard based alternative.

(3) High-Resolution Displays and Workstation

The image workstation should be equipped with a high-resolution display to improve the image quality of both graphics and text. A sharp display will give a better idea of new image documents similar to printing, especially the documents consist of detailed blueprints and CAD/CAM drawing and the rest. A high resolution display can also reduce eyestrain, an important consideration when operators must view screens of data most on the following day. For Information asset management, especially work flow processes that require continuous viewing, low quality of display and workstation should be avoided.

(4) Printer

Printer is common output in automotive manufacturing environment and most of information asset management application requires the high resolution of laser printer. Users can print document and drawing in variety of ways. Users can print single pages from a folder, entire folder or several folders in batch mode. Print commands are selected from a menu at the view workstation. The administrator can modify the lists of print job, authorized, queue and other for get control the requirements and security.

The company can develop the current system with Application of specific view and Intranet network, which appropriates with above components. The proposed system will be built as an application specific view that is important component of Intranet network. It can operate with each work because of application of specific view is designed to solve specific work problems and it can help to ease the normal tasks for other department to work faster and more accurate. Database of proposed system should be stored in the server installed on Windows NT Server to responds

users to operate their data. The users can use an application of specific view by connecting to the database via Intranet network. The Intranet network will help users, who are operating in the organization such as R&D Department, Production Department, Spec Control Section and PIC Section and also external organization such as vendor and customers. Some important document will be allowed only for users who have authority to access them. The users can connect to the application after they put user name and password. It will show the main menu of some information of mailing advice, design note, identify document, and so on. They can search exposed information that the company allows other people to know.

The information asset management system of SNA Company is shown as flow diagram in Figure 4.1.

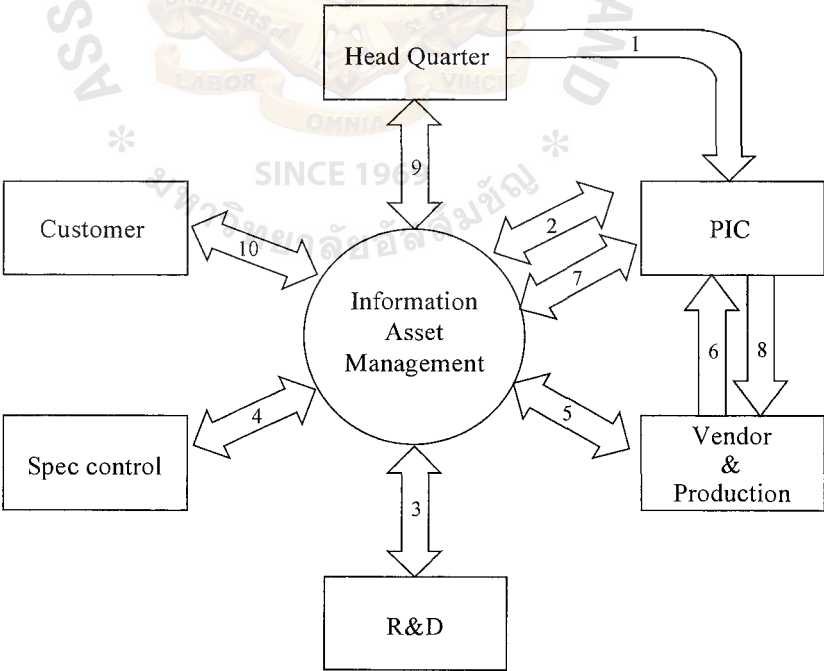


Figure 4.1. The Flow Diagram of Information Asset Management System.

The flow diagram of the information asset management system on Intranet network is described in details as followings:

- (1) Head quarter from Japan will send the information and document via the Internet to PIC Section.
- (2) PIC Section will upload information to the Intranet and set the authority for protect the database from unauthorized users.
- (3) R&D Department can check and update information by using Intranet networks.
- (4) Spec Control can login to the Internet networks themselves to check and control the revision from their own computer.
- (5) Production department and vendor can request and get permits by using their own username and password for login and use authority for accesses the request information.
- (6) After Production department and vendor check the number of request document, they request PIC Section for get the hard copy for production process.
- (7) PIC Section can search easily all information of document in database server through Intranet and print out follow the request for approval before production.
- (8) After approved by PIC Section manager, PIC Section will send the document to the production department or vendor.
- (9) Head quarter can use Intranet networks to re-check and more effectively perform.
- (10) Customers can login to Internet to ask the question and get additional information about products and problem solving.

4.2 Function of Intranet Network Systems

(1) Resource Sharing:

User of Intranet network can access a variety of resources through the database server. Usage may be too low to justify buying a specialized or expensive device for just one system. However, sharing common objects such as database reduces maintenance and storage costs while providing each user with in provide access.

(2) Increased Reliability:

Since a computing network consists of more than one computer, the failure of one system or of just component need not block user from continuing to compute and access. Being the main factor the server can increased reliability of the Intranet network.

(3) Distributing the Workload:

The degree of function of workload for a single system can be moderated in a network. So, the workload can be shifted from a heavily loaded system to an under utilized one.

(4) Expandability:

Intranet network systems can be expanded easily by adding new nodes. This expansion of the user-based can occur without the manager of any single system having to take special action.

4.3 The Information Asset Management System Environment

The proposed system adds up a server that includes Intranet network and database system for the host computer can directly access the network by using their own username and passwords to search the request information. The permission level is allowing the user to access information in the database server in term of read only, print

only, read and print or full control. The switching hub from the server will connect to other hub of each department by transferring and accessing information via the network cable and information asset management system environment will obtain rapid information by accessing the computer through on-line network system. The Intranet network system environment is shown in Figure 4.2.

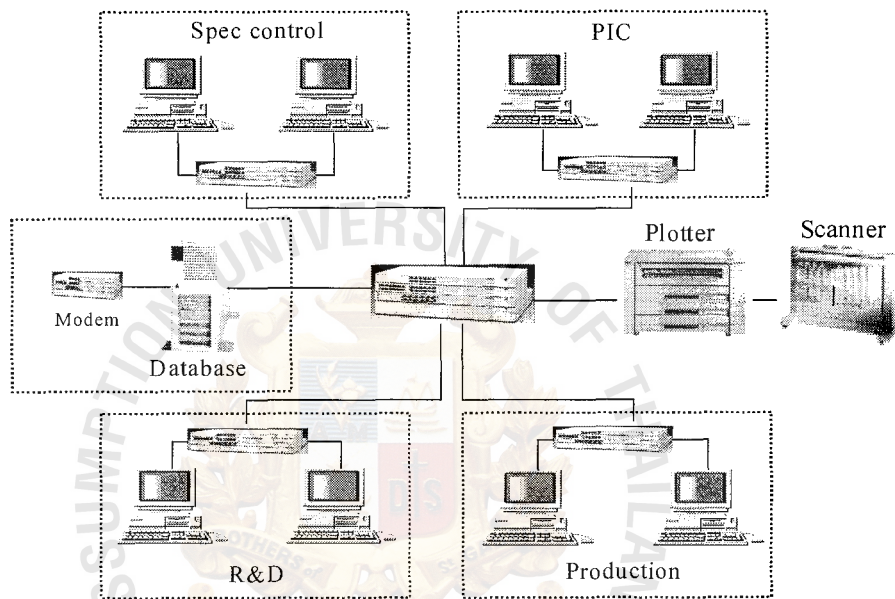


Figure 4.2. Intranet Network System Environment.

4.4 Hardware and Software Design

These hardware and software are analyzed in terms of cost, technology and other potential alternatives. Some principles are used to analyze as described below:

- (1) Avoid proprietary architecture
- (2) Treat it as a long-term strategic platform
- (3) Provide hardware required for proposed system and comfortable for service and maintenance.
- (4) Provide efficient use of equipment to the internal and external network.

The proposed system should provide the hardware and software as following:

4.4.1 Hardware Design

- (1) Server (For minimum requirement)
 - (a) Intel Pentium III Processor, 1.6 GHz
 - (b) 512 MB Memory
 - (c) Hot-plug Ultra 2 Hard disk, 40 GB
 - (d) FDD 1.44 MB
 - (e) CD-ROM Drive
 - (f) Monitor high resolution 15"
- (2) Host Computer
 - (a) Intel Pentium III Processor, 1 GHz
 - (b) 128 MB Memory
 - (c) Hard disk, 10 GB
 - (d) FDD 1.44 MB
 - (e) CD – Read and writable
 - (f) Monitor high resolution 17"
- (3) Other Peripherals
 - (a) External Fax modem 56 KBPS, support V.90
 - (b) UPS 1 KVA for sever
 - (c) Wide format network scanner
 - (d) Wide format network laser printer
 - (e) Hub 10 ports 100 Base-TX

4.4.2 Software Requirement

- (1) Operating System: Microsoft Windows 2000 Server
- (2) Application: Application Specific View

V. FEASIBILITY ANALYSIS

SNA Company needs to design the process that can turn their current resource to meet them together with the situation they need to be. Every company must organize the huge of information to analyze the situation between the current system and proposed system to select one of them to be the main direction of organization. The decision-maker must decide on the plan that can classify them into three main functions:

5.1 Operation

Operation can be identified in intangible of advantage and disadvantage. The major of intangible benefits are increasing the Time-to-Market of product launching, time saving to search in each tasks of document and security of knowledge asset in organization. These proposed systems also create values and usefulness to each users and other department but new system can not create the revenue and profit in tangible aspect because the proposed system will help operational objective to improve working process and communication route in the organization. The information asset management system is important solution, which is used to share information, knowledge and database in the company. All users can access the database to search and update information, and include communicate between departments via Intranet networks.

R&D department, production department, vendor and customers do not need to waste a lot of time to stand-by at the PIC Section's room in order to waiting for their request document and information. The new system also increases the total of productivity of organization and also improves the customer satisfaction in the objective of operational aspect. For PIC Section, we can customize their manpower by move some staff to help the other department and other jobs because the proposed system uses only few people at standby to the system. Whenever the new system is implemented, the

information from the head quarter and current data will be upload by PIC Section for sharing to the other department and control by permission of each user that can access and download the information from the new system.

The current operational system has many types of cost such as delivery cost, salary, operational cost, and cost of material consumption such as paper, files, cabinet, copies cost and transportation cost for copying. Salary and delivery cost of existing operational system is direct tangible cost. It means that company pays money for employees' hiring and for information, which are sent from head quarter. Pollution also includes in feasibility plan of SNA Company report because the dust of document in the storage room and much more when searching a lot document from cabinets. All of information consumption is secondary intangible cost for company because this process affects with employee's health. Papers, files, cabinets, copies cost and delivery cost also are included in direct tangible cost, because the company needs to pay amount of money for these materials and activity. The information asset management system has installation cost, operational cost, training cost, electricity expense for air-condition, computer and other electronic hardware. This solution need to include the initial investing cost such as hardware and software. All of the above costs are direct tangibles that can be measured by the result of the proposed system. The direct intangible cost is disadvantage and some affects that cannot be measured by using the result of work but can be compared by using the feeling of users. It consists of health status of employees or the willingness of each employee dedicated to their organization.

The tangible direct benefit of new operational system is saving cost such as paper, and copies cost. The intangible benefit cannot be measured the value of amount. Employees will get convenience, flexibility, easy to work, and security of the knowledge asset. The existing system is not advantageous for SNA Company in the

future because of the growth in term of information asset sharing of globalization business and Time-to-Market of product launching in automobile environment. The company's direction is important factor that we should focus in order to adapt and improve the proposed system plan to solve and increase the productivity of the company. All of employee in the SNA Company and their customers can get advantages from information asset management solution because all of them can use the Intranet network to improve performance in the company in the aspect of communication, accuracy, reliability, security, and convenience.

5.2 Marketing

Marketing should be consisted of these five steps: conduct a situation analysis (define the current problem), develop objective (focus on the problem and finding the alternative), determine the differential advantage (design the proposed system), select the target market (define the scope of problem) and measure market demand (estimate the need of proposed system) design the tool which also includes tactics as well as solution and technology. All of steps are used in comparison between the current system and proposed system to find the best feasible alternative. We already conduct the current situation and develop the proposed system emphasized on the latest technology that is the differential advantage that can solve the current problem of users. These projects also set the scope by focusing on PIC Section, which designs the solution to solve the current problem. The feasibility of the project in function could be classified into tangible and intangible of cost and benefit.

Information asset management solution does not provide directly advantage in term of money because the PIC Section does not sell this proposed system but they use it as media to share information within their organization and customer. Therefore, there is no tangible benefit with this part. The tangible cost, which is money to install and

operate the project, will not be included in this function because the main thing is not directly related to marketing. There are some intangible advantages, which cannot really estimate in term of revenue or money. PIC Section can use the proposed system to support faster and more convenience than the existing system. Information asset management solution should be implemented for benefits over costs in marketing objective in the organization. There are many advantages, which can get from the proposed system such as time saving, communication route within organization, company's image and communication channel to customers.

5.3 Financial

Financial function can provide the result of this project by focusing on the term of how well the organization is doing and managing the capital and guide the organization to utilize its financial resources effectively. The information asset management system of this project is a kind of investment to increase efficiency and effectiveness in the organization. It will be analyze in term of money in this part such as cost and benefit of existing and new operational system.

5.3.1 The Cost of the Existing System

There are two main items of the costs of existing system containing of labor cost and material and facility costs.

(1) Labor Cost in SNA Company

The salary of related staffs for the existing system in SNA Company is demonstrated in Table 5.1. and descriptions of each item are explained below in each number of items. This data is estimated from supervisor of PIC Section' interview and Finance department.

Table 5.1. Salary of Staffs (Baht).

No.	Description	Month	Year	Working Rate	Cost in Year
1	Manager (PIC Section)	53,500	642,000	50%	321,000
2	Supervisor (PIC Section)	35,000	420,000	80%	336,000
3	Senior Staff (PIC Section)	17,500	210,000	100%	210,000
4	Staff (PIC Section)	12,500	150,000	100%	150,000
5	Staff (R&D Dept.)	12,500	150,000	25%	37,500
6	Staff (Spec Control Dept.)	12,500	150,000	25%	37,500
7	Staff (Production Dept.)	12,500	150,000	45%	67,500
				Total	1,159,500

Manager of PIC Section has responsibility to communicate with other department in the term of policy and direction. He contributes approximately four hours a day or 50 percents of working time to approve and check the list of document sent from head quarter.

Supervisor has another job to checking and marking on the master of document by following the list received from the senior staff and communicate with other department for inform and update for the latest information. She contributes about six and a half-hours a day or 80 percents of total work for the job of PIC Section.

Senior staff wastes eight hour a day or 100 percent of total work to checking and recording the number of document into the book and also help the staff to search information in cabinets for the vendor and production department. Staff also use eight hours a day or 100 percent of total work for searching and filing the document back to the cabinet.

Staff of R&D department and Spec control department waste two hours a day for waiting the staff of PIC Section finding the document from cabinet that or 25 percent of total work for waiting them in each requested to update the information in existing documents.

Staffs of production department need to spend more time in PIC Section's because they need to use a lot of master documents to produce the product and parts of car. So, staffs of production department waste three and a half-hour or 45% of total work in waiting for the searching of the original document and make the copy processes.

(2) Material Consumption Cost

From the record of material consumption cost, that gets from administration's interview is described in Table 5.2, it consists of paper, copy cost, file and cabinet. A3, A4 papers are used approximately 6 packs a month or 72 packs per year at cost of 150 Bahts per pack; its cost is totally 10,800 Bahts and approximately 36,000 pages a year for copy at cost of 0.75 Baht per copy; its cost is totally 27,000 Bahts. A0 papers are used approximately 670 meters a month or 64 rolls per year at cost of 696 Bahts per roll; its cost is totally 44,544 Bahts. Approximately 3,750 sheet A0 a year that production department made the copy from out-source at cost of 40 Bahts per copy; its cost is totally 150,000 Bahts. All those papers are used to make copy for document and information in product and part information of produce and sales, reports of R&D Department and production departments, the company needs to purchase a new cabinet in each year. 3,400 Bahts is the cost for each cabinet that use 34 cabinet in drawing and 4 cabinet for A3, A4 document per year; its cost is totally 129,200 Bahts. Files for A3, A4 document approximately 14 files per year; its cost is totally 630 Bahts. (Source: Administration and Accounting Department)

Table 5.2. Material Consumption Cost (Baht).

No.	Description	Year
1.	A3,A4 Paper Cost	10,800
2.	A0 Paper Cost	44,544
3.	Cabinet	129,200
4.	File for A3,A4 Paper	630
5.	Copy cost (Out-source)	150,000
	Total	335,174

(3) Facility Cost

Facility cost also being another factor that should be included in feasibility analysis. Approximately two boxes per day that SNA Company need to pay or 528 boxes per year; its cost is totally 63,300 Bahts. Space for both of storage room is 158.7 square meter that rental rate reference from Kink-gauw warehouse is 70 Bahts per square meter; its cost is totally 11,109 Bahts. 4 units of air-condition within 2 storage room has totally 82,000 BTU; its cost is totally 62,536.32 Bahts per year. Table 5.3 shows the cost.

Table 5.3. Facility Cost (Baht).

No.	Description	Year
1.	Delivery Cost (OCS Delivery)	63,300
2.	Space Rental	133,308
3.	Electricity for Air-condition	62,536
	Total	259,144

Three items cost of the current system is identified in Table 5.4; these costs are consisted of labor cost, material consumption cost, and facility cost. These costs relate to operational system before implementation of the proposed system, and the main cost is labor cost that proposed system can create time saving.

Table 5.4. The Total Cost of the Existing System (Baht).

No.	Description	Year
1.	Labor Cost	1,159,500
2.	Material Consumption Cost	335,174
3.	Facility Cost	259,144
	Total	1,753,818

5.3.2 The Cost of the Propose System

There are five cost items in the process of information asset management system is implement. These consist of hardware, software, training and electricity costs.

(1) Cost of Hardware

Hardware, which is recommended by system engineer of System Development Company, has to be installed for this proposed system. A set of hardware should be consisted of a server, host computer, wide format scanner, wide format printer, modems and UPS. These types of hardware components will be got three years warranty basically. The price would be surveyed from Puntip Plaza, www.puntip.com and PC Magazine that will be displayed in Table 5.5.

(2) Cost of Software

Microsoft Windows 2000 Server, which is recommended by system engineer of System Development, has to be installed in the server. This software works as operating system for the server. The price would be surveyed from Advance-Tech Company that is authorized dealer of Microsoft; it will be demonstrated in Table 5.6. Application of Specific View is a program that will be installed for the proposed operational system of this solution, and System Development Company will develop application in order to get the appropriate system for the SNA Company.

Software Development Company has estimated the cost and expense of application specific view as described in Table 5.6.

Table 5.5. Hardware Cost.

No.	Description	Baht
1.	Server (1 Unit) Intel Pentium III Processor 1.6 GHz 512 MB Memory Hot-plug Ultra 2 Hard disk, 40GB 15" Monitor High resolution FDD 1.44 MB CD-ROM Drive	87,000
2.	Host computer (4 Units)	100,000
	Intel Pentium III Processor 1 GHz	
	128 MB Memory	
	Hard disk, 10 GB	
	FDD 1.44 MB	
	CD-Read and writable	
	17" Monitor High resolution	
3.	Wide Format Scanner (1 Unit)	675,000
4.	Wide Format Printer (1 Unit)	700,000
5.	External Fax/Modem 56Kbps, V90 (1 Unit)	5,000
6.	Hub 10 ports 100 Base-TX (1 Unit)	12,000
7.	UPS 1 KVA for Server (1 Unit)	17,500
	Total	1,596,500

Table 5.6. Software Cost.

No.	Description	Baht
1	Microsoft Windows 2000 Server (5 users)	30,000
2	Application Specific View for client (50 users)	275,000
	Total	305,000

(3) Training Cost

Estimated the On-site training cost for one week after the proposed system is implemented consisted of user manual, administration manual, transportation fee and limited on 5 trainees, as shown in Table 5.7.

Table 5.7. Training Cost.

No.	Description	Baht
1.	On-Site Training Cost (5 trainees)	31,000
	Total	31,000

(4) Installation Cost

The estimated of Installation cost for network route that communicate within organization that link between 5 location of each department, as shown in Figure 5.8. Advance-Tech Company and VP Computer informed this data.

Table 5.8. Installation Cost.

No.	Description	Baht/Year
1.	Installation Cost	40,000
	Total	40,000

In Figure 5.9. the four cost items are identified in the new system; hardware, software, training costs and installation cost are initial investment.

According to Information asset management system, the project life time will be set to five years because the technology would not change much in the near future and this proposed system could support tasks and applications in the company for five years approximately. Cost occurring in the beginning of the year would be the initial investment cost, which includes hardware, software, training and installation cost.

Table 5.9. The Cost Items of the Proposed System.

No.	Description	Baht
1.	Hardware Cost	1,596,500
2.	Software Cost	305,000
3.	Training Cost	31,000
4.	Installation Cost	40,000
	Total	1,972,500

5.3.3 The Cost Saving of the Proposed System

One of advantages for proposed system is cost saving in differentiate between existing system and proposed system as below:

(1) Cost Saving of Labor Cost for Proposed System

According to the observation and interviews from related employees, if the proposed system is implemented, the employees' working hours will be reduced as shown in Figure 5.10. For instance, Manager of PIC Section will decrease working time to be only one hours a day for checking and approving on network application in relate issue for proposed system. Supervisor of PIC Section also decrease her task and working time to be only two hours for send the mail and important information to inform other department and answer the question in case of document information. The proposed system can use only one senior staff to up-load the approved information on the network and standby to search the specific document requested by internal users. The other staff can save time in document finding, document checking and approving and so on by using the proposed system.

Table 5.10. Cost Saving of the Labor Salary.

No.	Description	Year	Working Rate	Cost in Year	Cost Saving in Year
1	Manager (PIC Section)	642,000	12.5%	80,250	240,750
2	Supervisor (PIC Section)	420,000	25%	105,000	231,000
3	Senior Staff (PIC Section)	210,000	35%	73,500	136,500
4	Staff (PIC Section)	150,000	0%	0	150,000
5	Staff (R&D Dept.)	150,000	0%	0	37,500
6	Staff (Spec Control Dept.)	150,000	0%	0	37,500
7	Staff (Production Dept.)	150,000	0%	0	67,500
			Total	258,750	900,750

(2) Cost Saving of Material Consumption

Cost of material consumption in the proposed operational system would be saved because every data will be stored in database network system in the server, as shown in Table 5.11. Data comes from MIS Department.

Table 5.11. Cost Saving of Material Consumption (Baht).

No.	Description	Year
1.	Cost of material consumption	335,174
	- A3,A4 Paper	
	- A0 Paper	
	- Cabinet	
	- File for A3,A4 Paper	
	- Copy cost (Out-source)	
	Total	335,174

(3) Cost Saving of Facility

Facility cost in the proposed system will be saved for the PIC Section because the delivery cost can be cut by changing into network environment. PIC Section can reduce the space requirement at a half of current area for implement the proposed system and also reduce the electricity of air-condition into 2 units. Table 5.12. shows this cost saving a year.

Table 5.12. Cost Saving of Facility (Baht).

No.	Description	Cost in Year	Requirement	Cost Saving Year
1.	Delivery Cost (OCS Delivery)	63,300	0%	63,300
2.	Space Rental	133,308	50%	66,654
3.	Electricity for Air-condition	62,536	50%	31,268
	Total	259,144		161,222

Table 5.13. presents the benefit of the proposed system when being implemented. The solution lifetime is five years. This table shows summary of cost saving in term of cash flow for each year.

Table 5.13. Cost Saving Outflow of the Proposed System.

No.	Description	Cash Flow (Baht)					
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
1	Cost Saving of Labor Cost		900,750	900,750	900,750	900,750	900,750
2	Cost Saving of Material		335,174	335,174	335,174	335,174	335,174
3	Cost Saving of Facility		161,222	161,222	161,222	161,222	161,222
	Total		1,397,146	1,397,146	1,397,146	1,397,146	1,397,146

5.3.4 Analysis of the Proposed System

From the Table 5.14., the contrast of cost and benefit occurring each year and in period zero is a negative value because it has a huge investment such as hardware, software, and application of specific view in the first year. In the second year, it can get positive value for the proposed operational system because it can save labor, material consumption cost, facility cost and exclude huge investment. It will get profit in the same amount from end of the first year until the end of the solution plan.

Percentage of discount rate is 3%, which is interest rate of normal annual saving of Siam Commercial bank. In the calculation of the costs and benefits occurring each year using NPV method to find out the result from the implementation of proposed operational system in Table 5.14. According to formula of NPV in literature review, the calculation will be shown below:

$$\begin{aligned}
 NPV = & -1,972,500 + (1,397,146 - 258,750)/(1+0.03)^1 + (1,397,146 - 258,750)/ \\
 & (1+0.03)^2 + (1,397,146 - 258,750)/(1+0.03)^3 + (1,397,146 - 258,750)/ \\
 & (1+0.03)^4 + (1,397,146 - 258,750)/(1+0.03)^5
 \end{aligned}$$

The cost of proposed operational system in NPV is equal to 3,065,533.24 Bahts and benefit is equal to 6,398,519.58 Bahts as shown in Table 5.14. The NPV from above calculation is equal to 3,332,986.34 Bahts, which is positive value, so this project is feasible to invest.

Table 5.14. New Operational System Analysis by Net Present Value.

No.	Description	Cash Flow (Baht)						NPV
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	
1	Cost of New Operation	1,972,500	258,750	258,750	258,750	258,750	258,750	3,065,533.24
2	Benefit from Proposed		1,397,146	1,397,146	1,397,146	1,397,146	1,397,146	6,398,519.58
		-1,972,500	1,138,396	1,138,396	1,138,396	1,138,396	1,138,396	3,332,986.34

According to value of different between benefit and cost in the Table 5.15. the benefit-cost ratio is equal to 2.33 from benefit over cost. This value can be used to calculate break-even point by conversing annual worth of year 1 to 5 to be present worth, summing with the present worth of year 0, and equaling to zero. After that uniform-series present-worth factor is used to interpolate, or cost and benefit of proposed operational systems are cumulative; the breakeven point of this project is at year of 2.01 as described in Table 5.15.

Table 5.15. Breakeven Point Analysis.

No.	Description	Cumulating (Baht)					
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
1	Cost of New Operational	1,972,500	2,231,250	2,490,000	2,748,750	3,007,500	3,266,250
2	Benefit from Proposed System	0	1,397,146	2,794,292	4,191,438	5,588,584	6,985,730

In Figure 5.1. this graph uses data of accumulation in Table 5.15. to plot lines for five years or project lifetime. It is a graph that is used to identify breakeven point in contrast of cost and benefit lines of the proposed operational system.

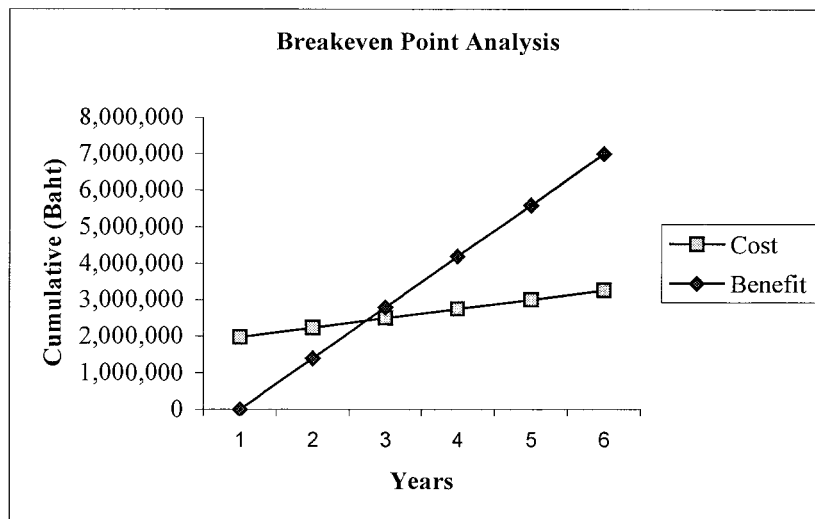


Figure 5.1. Breakeven of Benefit and Cost in the Proposed System.

According to the result of the evaluation in finance function, the company can save amount of money that is contrast to benefits and costs between current and proposed operational system. In term of finance, this project should be implemented because NPV identifies positive value, which means the company will gain benefit over satisfaction in rate of return. Although the company needs to pay high amount of money for initial investment, it will gain more benefits over costs in the long term as described in breakeven analysis.

VI. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

During high competitive situation, Automotive industry needs to develop their organization to compete with each other. The way to be competitive includes cost reduction, high productivity, good quality and consistency. SNA Company, found in 1971, is an automobile manufacturer that provides Research and development, produce engine and assembly the car. The major business of this company is assembly the cars by following the main structure sent from Head quarter. After operate for 15 years ago, SNA Company change the new location to factory set up at Bang NA KM. 21. Planning and Information Control section has been set up for responsible to function of document control. All activity of this section done by manual process because they lack the knowledge of information asset management and have no any pressure that tries to develop for being the leader in the technology of document management.

So, Information asset management is an effective way of improvements and productivity increases through implementations of document management systems by focusing on planning and information control section of automotive manufacturer. This project also shows the benefit of system and find the suitable solution by using optimize of additional equipment.

Information Asset Management is not a single technology that can accomplish the target but combination of elements and focus on the control of electronic document and image throughout their entire life cycle for storage and retrieve from the network server.

The Existing system of SNA Company wastes a lot of time in the processes of document control within organization. The benefits of Information Asset Management System will be reducing the cost of labor, material consumption and other facility. The proposed system also reduced cycle times in PIC Section after implement the total

system. The proposed system will come up with the network system and information asset management system by developing on Window 2000 and application of specific view.

Finally, the new system has been designed to meet the expectation and also to solve many problems found when analyzing the existing system. The project planning is conducted to determine whether the proposed information asset management is worth investing. The study also shows the payback period of about 2.01, which indicates that the investment on the proposed system will be recovered in about 2 years.

6.2 Recommendations

According to competition in business, Time to market, is a crucial factor for a major leader in this area. Response from the study showed that most users need the automated system and security process that can be controlled. Due to the weakness of the existing manual process, Information asset management system is new solution in order to eliminate the current weakness process. However, besides what has already been mentioned and improved, there are needs for further development in solution and these can extend the area covering automated system. These ideas are the network system that can directly link to head-office in the Japan. Wide Area Network is recommended for the purpose of sending the information asset by online network that can reduce the processing time and lead time of delivery. The result can increase the productivity of total performance of the company. Another one is budget and forecasting are recommended in the proposal of each department and section. Forecasting for effective planning can create vision of management people in each organization. There is much unclear point for other problem that can be discussed but we need to implement the proposed system into the organization first. Because of the progressive of project implement processes that is slow but it is very important step for

us that will be the route and correct way to develop the progression into the next step that thing is the important step we should focus. When the users are familiar with each steps and processes of information asset management system, the progressive will move into advance system that can be develop them to expertise system. Further, this project could be a good example for other companies to follow the same solution and direction. They could use this project to be as guide to study on cost and benefit analysis to study feasibility of activities in order to improve efficiency and effectiveness of the organizations and can use them to be the prototype

Finally, the new system can provide better process not only to the Planning and Information Control section of SNA Company, which can implement this solution but also for other organizations. Other automobile manufacture can use this project to be as guideline for evaluation whether the project should be implemented before they make decision. The beginning of proposed system is to evaluate the existing system and to recognize of the proposed system to improve the current process. The decision-maker can use costs and benefits analysis to measure and estimate advantages and disadvantages that might effect their company after implementation. If the final decision is to replace the existing system with the proposed system, the implemented system should be analyzed whether the requirements are satisfied or acceptable.

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