Abstract. Pesantren Siswa Al Ma’soem (PSAM) is an educational institution that has more than 500 equipment’s used to support operational activities. But in the management of equipment inventory is still done semi-computerized, namely using Microsoft excel. Thus, causing problems such as officers’ difficulty in performing physical checks of equipment with existing data, difficulty knowing the information of equipment in the PSAM, limited working hours to access equipment information and allow data loss and duplication of data. The purpose of this research is to overcome problems arising from the current system. The purpose of this research is to facilitate officers in performing physical checks of equipment with existing data, make it easier to know the information of equipment located in branch offices, equipment information can be accessed without limited working hours during the internet network and minimize the occurrence of data loss and duplication of data. The analysis carried out in this study includes analysis of the current system and analysis of the proposed system. The system design used is by approaching the OOAD (Object Oriented Analysis and Design) method with the Unified Modeling Language (UML) language. The design of this information system is expected to facilitate officers in conducting equipment inventory, presenting necessary equipment information anywhere and anytime, and minimizing the occurrence of data loss and duplication of data.

1. Introduction
The development of information technology at this time has brought very important benefits for the advancement of human life. The development of information technology can now really be felt benefits in human life, it is undeniable that the development of information technology provides prosperity to human life, ease in doing everything and can make the relationship between humans is no longer limited by space and time.

At this time the development of information technology is growing with the existence of the internet. Internet is an electronic communication network that connects one media with another. With the internet all things can be done, one of them is like looking for the necessary information. Usually the media that provides about this information is the website. Website is a communication media connected to the internet network where users of information can access all information contained in it.

The development of information technology at this time has also penetrated into various fields such as education, industry and others. With the existence of information technology applied to a particular
field will provide convenience in providing the information needed. In addition, information technology must be continuously developed in accordance with the needs of an institution or organization.

One of them is in providing information about equipment inventory in an educational institution, namely Al Ma'soem Student Boarding School.

This research was conducted at PSAM which is located at Jalan Raya Cipacing No.22 RT 01 RW 14, Jatinangor District, Sumedang, West Java 40394. PSAM has more than 500 equipment’s used to support its operations. The equipment includes whiteboards, desks, chairs, computers, cabinets, CCTV and so on. Inventory system equipment that is now running is semi-computerized, namely by using Microsoft excel. Equipment data on the procurement of equipment until inventory of this equipment is carried out by the Management of Facilities and Infrastructure in PSAM managed by less than 3 employees.

Inventory management is carried out independently based on data that has been done previous equipment inspection and the cost of equipment is borne by pesantren itself. The procedure for the procurement of equipment on the current system is first, the manager of facilities and infrastructure makes a submission for the procurement of equipment to the director. Second, after the submission is approved by the director then proceeded to the advice section to be carried out the realization of equipment procurement in accordance with the agreed and lastly done bookkeeping by the recording of facilities and infrastructure. Submissions and creation of equipment inventory reports are currently made on an annual basis and are only used for reports. Report creation using Microsoft Excel tools.

Thus, with the running of the current system, can be identified several weaknesses, including:
1. Some equipment has not been given an identity, so it is difficult to match the data on the field with the data recorded in the inventory list.
2. It is difficult to know the information of equipment in the PSAM environment because it can only be known in a few rooms.
3. To find out equipment information can only be known during business hours only
4. Possible occurrence of data loss and duplication of data.

Based on the identification of the weaknesses above, it is expected that there is a design of information system that can be used to overcome these weaknesses in order to facilitate the process of inventorying equipment in Al Ma'soem Student Boarding School.

2. Methodology

2.1. System Development Methods

The approach technique used in the design of this website-based equipment inventory information system is to use the OOAD approach. OOAD is a method used for analysis and design of systems with an object-oriented approach [1]. This object can be interpreted as an entity that has identity, behavior and existence. The system development method used is Rational Unified Process (RUP). This RUP is a system development method with object-oriented concept with UML modeling language. RUP (Rational Unified Process) is an iterative process for software development; originally proposed in 1988 as the Rational Objectory Process. Then proposed the Unified Process [2]. Based on the picture below, it can be seen that the RUP has two dimensions, namely:
1. The first dimension is depicted horizontally representing the dynamic aspects of software development. This aspect is described in the development stage or phase. Each phase will have a major milestone that signifies the end of the beginning of the next phase. Each phase can consist of one or more iterations. This dimension consists of inception, elaboration, construction and transition.
2. The second dimension is depicted vertically representing the static aspects of the software development process grouped into several disciplines. The software development process described into several disciplines consists of four important elements, namely who is doing, what, how and when. This dimension consists of Business Modeling, Requirements, Analysis and Design,
Implementation, Test, Deployment, Configuration and Change Management, Project Management and Environment.

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2.2 Flow Map
Flow map is a stand-alone software package dedicated to the analysis of spatial interaction data. In this context, spatial interaction data is considered as all data that describe the movement of people, goods, energy or information through space on a regular or irregular basis usually via some form of transport network[3].

2.3 Use Case Diagram
Use Case Diagrams are artifacts created during early phases of software development that are significant for formulating, corroborating and documenting the system behaviour [4]. Use cases describe a set of sequence of actions, including the variants that a system performs to generate a visible result of value to an actor. Use Case diagrams are central to modelling the behavior of the system or a sub-system. Each one of these represents a set of Use Cases, actors and their relationship [5].

2.4 Class Diagram
Class diagrams are static structures that provide an overview of the system by specifying classes and the relationships between them. They are used for a variety of purposes such as understanding requirements, modeling the domain-specific data structure, and describing detailed design of the target system[6].

Class diagrams are static structures that provide an overview of the system by specifying classes and the relationships between them. They are used for a variety of purposes such as understanding requirements, modeling the domain-specific data structure, and describing detailed design of the target system [7].

Figure 1. Fase RUP

The system development devices used are Flow map, Use Case Diagram, Class Diagram, and Activity Diagram.
2.5 Activity Diagram

Activity Diagram (AD) is an important diagram for modeling the dynamic aspects of a system[8]. Activities and the corresponding activity diagrams belong to the basic concepts of the Unified Modeling Language (UML) which has become the standard modeling language for specifying, visualizing and documenting software systems. Activity diagrams are used for modeling behavioral logic like business processes or workflow. In the modern UML 2, they experienced an increasing importance[9].

3. System Analysis and Design

3.1 System Analysis

3.1.1 Flow map

This flow map serves to explain the work program for the development of the new system.

1. New Equipment Submission Procedure
   a. The Facility Manager submits the procurement of new equipment by inputting the data of the procurement submission into the system and then printing the procurement sheet. After that, the procurement sheet is submitted to the facilities and infrastructure.
   b. The facilities and infrastructure department receives a procurement sheet and notification of procurement submissions from the system. Then, check the proposed price, the background of the procurement submission and the physical check of the equipment. If it is appropriate, the procurement sheet is approved and then submitted to the director. If it is not appropriate then the procurement sheet is not approved and returned to the manager.
   c. The Director double-checks the proposed price and background of the submission if it is appropriate then the procurement sheet is approved by the director.
   d. If approved by the director, the facilities and infrastructure section will realize the proposed equipment. Then the purchase note and procurement sheet are submitted to the support/accounting section to be inputted into the system.

![Flow Map](image)

*Figure 2. Flow map Proposed New Equipment Submission*
3.1.2 Use Case Diagram

Use Case Diagram serves to describe how the interaction between actors and the system. Here is a use case diagram of equipment inventory information system in PSAM.

![Use Case Diagram](image)

**Figure 3. Use Case Diagram**

**Activity Diagram**

1. Activity Diagram Administrator

![Activity Diagram](image)

**Figure 4. Activity Diagram Administrator Login**
2. Activity Diagram Infrastructure Department

Figure 5. Activity Diagram Administrator Manage User

Figure 6. Activity Diagram Facilities Section Login
3. Activity Diagram Bag. Support/Accounting

Figure 7. Activity Diagram Facilities Section Submission Notification

Figure 8. Activity Diagram Facilities Section View Tools

Figure 9. Activity Diagram Section Support/Accounting Login
Figure 10. Activity Diagram Section Support/Accounting Manage Purchases

Figure 11. Activity Diagram Section Support/Accounting Manage Tools
4. Activity Diagram Facility Manager

**Figure 12.** Activity Diagram Section Support/Accounting Manage Reports

**Figure 13.** Activity Diagram Facilities Manager Login
Figure 14. Activity Diagram Facilities Manager View Tools

Figure 15. Activity Diagram Facilities Manager Manage Submissions
5. Activity Diagram Director

![Activity Diagram Director Login](image1)

**Figure 16. Activity Diagram Director Login**

![Activity Diagram Director Manage Report](image2)

**Figure 17. Activity Diagram Director Manage Report**
3.2 System Design

3.2.1 Class Diagram

![Class Diagram]

Figure 18. Class Diagram

3.2.2 User Interface

1. Administrator Interface

![Administrator Interface]

Figure 19. Administrator Interface

2. Infrastructure Advice Section Interface
Figure 20. Infrastructure Advice Section Interface

3. Facilities Manager Interface

Figure 21. Facilities Manager Interface

4. Section Support/Accounting Interface

Figure 22. Interface Section Support/Accounting
5. Director Interface

![Director Interface](image)

Figure 23. Director Interface

4. Conclusion

With the design of information system inventory equipment Based PSAM, it can be concluded as follows:

1. This system will make it easier for officers in performing physical checks of equipment in the field.
2. This system will make it easier to know the information of equipment in the environment around PSAM.
3. This system can be accessed without being limited by working hours as long as there is an internet network.
4. This system will minimize the possibility of data loss and duplication of data

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