E-Event for Public Relation Services in IoT using Object Oriented Method

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Abstract. Completeness business process that have clearly define would be possible to implement into IoT. Time, speed, and easiness of interact are to be value in an organization to distribute their activities and it is a problem to answer. Therefore, to handle and make easiness in interaction between process business in public relation and client, it is important to build the application. Sequentially, the paper aims to present some activities on constructing the application on web technology. The method to build the application is an object-oriented method and calls UML (unified modelling language). UML has several diagrams to figure out the activities. The diagrams have consisted of use-case diagram, class diagram, activity diagram, and deployment diagram. The result of the paper is an application that calls E-Event through web technology and the contents like register, submit, manage, hold, evaluation and report an event. The research has a significant influence to manage the activities, especially in public relation service. Impact of the research is a reduction in time and cost, distributable, and easy to interact between institution and client. Add benefit is easy to operate and maintain.

1. Introduction

Today's technology has become a people's need, both from the use of computers to the internet. Technology is also very helpful in various fields today, from education, economics, to business. Various kinds of hardware and software have emerged and are widely used in the community. IoT (Internet of Things) is one issue in industry 4.0 [1]. Internet is not only for entertaining but also to interpret the goals or objectives of organizations. The advantageous concept of IoT has influenced every organization in the world [2]. One of them is Universitas Komputer Indonesia (UNIKOM). UNIKOM has several sections to manage of their operations. One of section is public relation and protocol to hold an event like seminar, manage guess and schedule every event. In order to handle many activities on properly guide, it is important to build the application. The act of application should be run like business process on public relation and protocol.

In the paragraph above, we mentioned some important activities to implement in IoT term. In the industry 4.0 era [1], it is crucial to building the application that runs on web technology [3]. The value of organization would be considered to enter on wide world. Time, speed, and easiness to interact are to be handled seriously in order to get an advantage [4]. It has to be some problems that have to answer on their organization. The problem existing, we have collected that there are some activities which have to automatically process in order to get an advantage like register, submit, hold, evaluation and report an event [4]. The activities should be maintained on the application that has automatically operate and give some notices into client without waiting for remainder. The application should be answered within the future challenge [1]. It is a reason why the research must implement in the proper technology. Contribution of the research is a novelty application base on web technology through the concept industry 4.0 that constructed by UML [5]. The offering concepts is built the application beginning from user requirement until report to make justification to fulfil the management goals. We conducted by business process in public relation section and reviewed by monthly to align with goal of application [6]. The impact of the research is all of activities in public relation section can run with the
fast response and fast reminder. Time, speed, and human interaction have good maintained and then
making decision can immediately justify.

The purpose of this research is described an implementation of application event management
through UML guided. The result of this research is some pictures and user interface which have
implemented on web programming. Some discussions about implementation that related to test a
software are viewed. We employed black-box testing to review an application and an appearance some
result between success and fail. Impact of the research for organization is the activity can apply the
event in reduction of time, indeed with the IoT technology the application can access in everywhere,
every time, and globally.

2. Method
2.1. System Development

This section explains about system development used in the research. The system development,
we have used by prototype method [7]. The prototype is one of system development constructed by
object-oriented in every step. We identified every step with an outcome in every output step. Several
steps in prototype have consisted of communication and requirement, quick design, early prototype
including testing and accomplishing, evaluation prototype especially analysis refine by user needs,
prototype improvement, and final prototype. We chose this system development because it is aligned
between research formal and practical.

2.2. Unified Modelling Language (UML)

In term of software engineering, we have known about system development. Every task in
software engineering should be properly guided by software development and used a method called
UML. UML was introduced by OMG (Object Modelling Group) since 1998 and be a part object-
oriented method [8]. There are consisted of nine diagrams such as use-case, class, activity,
collaboration, state, component, deployment, sequence, and package diagram [9]. In our research, we
only used four diagrams to figure out the design of application. The diagrams have applied like use-
case, class, component, and deployment. It is precisely enough for figuring small application.

Pseudocode in prototype process is built from series of task from requirement phase until end of
program [9]. At Table 1, we wrote the pseudocode to understand of prototype development. We
adopted from naturally process when we write application in system development.

| Pseudocode E-Event |
|-------------------|
| 1. Collecting requirement (list of requirement from user needs, construct master table for every actor and entity, using UML to describe the process) |
| 2. Mock-up version (built software to focus in human interaction like menu) |
| 3. Evaluate mock-up version to accomplish the application E-Event |
| 4. Coding application to transform series of task into programming language |
| 5. Application testing after coding complete, this phase to test application is the same with goals of application |
| 6. Application evaluation |
| 7. Operation of application |

2.3. Related Work

In a previous study conducted by Herry Yunanda aims to design an event management
information system at PT. X Jakarta [12]. The number of events carried out requires a system to
manage these events. One of the things that can help in managing the event is by creating an event
management information system that facilitates and improves company performance. The similarity of
this study with the research conducted by Herry Yunanda is to discuss event management [12].
Differences in problems that occur at PT. Izdiharkarya Setia is the use of Microsoft Excel and
archiving which has several problems so that the data is not well organized [12]. His research
presented many business processes from order until report to management.

Other research related to event management was also carried out by Fernando Is Suhendra [13].
His research aims to find out event planning, event organizing, event briefing and supervision
traditional wedding party [13]. The problem that occurs in Lintaswarna is that the company has difficulty in gathering traditional designers together in one forum and managing the event from planning to monitoring [13]. His research has presented an application which has organized the organization to get the easiness and interacts. The consumer when to be held a party, they have to consult to arrange the event and require the event management.

Every organization that organizes the event has a similar process. We acquired the same process like order, payment, consult, register, and report. Suppose to be research, we have built the application in a different context. We added some facilities to make simple an easy to operate for staff and client. We proposed a business process like register, submit, manage, hold, evaluation and report an event.

3. Results and Discussion
Following on the business process which has collected and step of prototype, we have identified that the application has six processes to implement on web technology. Every process is to be subject model in use-case diagram. Use-case diagram is not only drawn the process but also the actors who have interacted to the process [5,6]. The processes are consisted of register, submit, management event, operator event, evaluation, and report. Beside of them, to accomplish the model, we figure out three primary actors like organizer, rector secretary, rector, Directorate of human relation and protocol. Organizer is a part of actor from whole actor defined and divide into two parts. The parts are internal and external work.

At Figure 1, we show about use-case as a primary process in E-Event. Every actor is associated to every case that depends on their responsibility. Actor organizer has associated to many cases beginning register, submit, manage, organize, and evaluate. Between actor organizer and another actor like rector secretary and directorate, they have associated with case. The left side in submit information and right side is accepted information (See Figure 1 and Table 2).

![Figure 1. Use-case diagram E-Event](image-url)
Table 2. Description each case in use-case diagram at figure 1.

| Use-case name | Description |
|---------------|-------------|
| Register      | This activity is carried out by the organizers both internally and externally before submitting an event at UNIKOM if you don’t have an account. This activity is carried out after the organizer logs in or enters the system, where the organizer will begin submitting the event and complete the required requirements while awaiting the approval of staff administrator. |
| Submit        | This activity is carried out by the main admin, namely the Directorate of Public Relations and Protocol UNIKOM, where system supervisor will manage the officers needed by the organizer in the event after obtaining approval from the UNIKOM Chancellor whose approval is represented in the system by the secretariat. |
| Manage        | This activity is carried out by both parties in the e-Event system, both from the organizers, the Directorate of Public Relations, and Protocol UNIKOM after the proposed event is approved by both parties. |
| Organize      | This activity is carried out by both parties in the e-Event system, both from the organizers and the Directorate of Public Relations and Protocol of UNIKOM by inputting evaluations from the implementation of the event. |
| Evaluation    | This activity was carried out by supervisor of the Directorate of Public Relations and Protocol of UNIKOM, which printed the report and submitted it to the UNIKOM rector. |

Construction the E-Event, we included human interaction as a communication screen in menu. Easiness and graphical view will be comforted to the user on using the web application. The menu has consisted of various sub menu to guide the user in order to service all the needs of user. Component diagram, if the system has run on the web, user can see various menu on the first display.

Another important in software engineering is system testing [14]. We have a series task to test E-Event and tested by black-box testing [14]. Table 3 describes testing on every process in E-Event. We gave the state in pass or not passed, this comment will be warranted that the E-Event web is running well and no error.

Table 3 shows part of E-Event application. We deployed by PHP programming and MySQL to make the database [15]. After evaluation E-Event application, we have tested that all parts of application are proper execution. There has no mistake in programming and goal application [15].

Table 3. Testing application of E-Event [14]

| Part of testing       | Testing Scenario                                              | Expected result                                    | Testing result |
|-----------------------|---------------------------------------------------------------|---------------------------------------------------|---------------|
| Register Form         | Input data with wrong constraint                              | Register success                                   | passed        |
| Login                 | Username and password input as authority login                | Enter to proper webpage as authority login         | passed        |
| Submit event          | Input with wrong submit                                       | Submit event success                               | passed        |
| Submit event          | Input with proper submit                                      | Submit event success                               | passed        |
| Submit event          | No action to input                                            | Submit event success                               | passed        |
| Upload button enclosure| Click and file select                                         | Upload success                                     | passed        |
| Print event plan      | After full mail enclosure and requirement, click print button | Print the proper event plan                        | passed        |
| Admin validation for submitting event | User did not validation select anything | Error validation                                  | passed        |
| Evaluation Form       | Input with max string length                                  | Input evaluation success                           | passed        |
| Print report          | Select month and validation status, click print               | Print success                                      | passed        |
4. Conclusion

Based on research that has completed through various stages such as analysis, design, system development, testing, and system implementation, it can be concluded, e-Event is a system that helps to make it easier for users to process event submissions, manage completeness and event requirements until the implementation and evaluation of the event. E-Event also helps facilitate the admin in selecting and registering events or visits that enter every day at UNIKOM. The process of submitting an event can be submitted by E-Event without sending email, phone, and another. Event validation process carried out by supervisor can be monitored directly by the user or organizer. In testing application, we gained 100% success run through web technology or all procedures are passed. Impact of E-Event is communication process to be faster than manual process. On the other word, it reduces time and cost, as well as distributable quickly and easy to maintain.

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