# AITCS

# UTHM Online Activity Management System

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**Abstract**: At present, activity and venue application at Universiti Tun Hussein Onn Malaysia (UTHM) is managed by Hal Ehwal Pelajar dan Alumni (HEPA) and Pejabat Pengurusan Akademik (PPA). Application forms and related documents are in a paper-based file and handled manually by a staff of these two departments. However, this type of method is less effective especially when handling a huge number of applications because it takes a too long time to revise. Therefore, this study developed an online activity management system to help manage these kinds of jobs. This project will be developed by using the agile method and using web-based languages. By using this system, a club representative can upload their activity proposal and supporting documents. They can easily check the status of their presentation in this system. Besides, the administrator of HEPA can search and review the summary of each club. This project involved three users which are club representative, administrator of HEPA, and administrator of PPA. This developed system will improve the efficiency of activity management and summary retrieval. Therefore, the system is expected to improve the efficiency of activity management and reduce the usage of paper in applications.

**Keywords**: Activity management system, Agile, Scrum

## 1. Introduction

Apply an act to make a formal request or petition, usually in writing, to a court, officer, board, or company, for the granting of some favor, or of some rule or order, which is within his or their power or discretion(Featuring Black's Law Dictionary Free Online Legal Dictionary 2nd Ed). The apply phase to organize an event or activity occurs when an individual or a group of people plan to have a legal permit to run through all their preparation and ideas in a certain place at a certain time. People who want to apply for an event or activity will usually walk into the department that in charge of the permit and submit their event or activity proposal after they are filling up the application form. Then the application form will read by the staff of the department by referring to the proposal. The staff will contact the contact number written on the application form and arrange a slot for him to present his event or activity. The objective and outcome of the event or activity will be rated during the presentation. Once the event or activity had been approved, and an event approval letter will be generated. By using the approval letter, he can now apply for the venue of the event or activity will be held. The organizer will be moved on to the department in charge of venue rental. The same process will be repeated by filling up an application form. The staff will first check the availability of the venue. Once if the place has already been booked or not available for that time, the staff will advise him to

change the date or the venue of his event or activity. Before submitting the application form, the staff will explain all the rules and regulations and the fees of the rental to him. If there are no problems or requests, the organizer is required to sign an agreement. This agreement is to ensure the organizer follows the rules and takes care of the facilities. The organizer will complete his application by receiving the venue approval letter. Later, the organizer promotes their event or activity through the internet and social media by themselves to attract people to join.

Currently, the activity application system in University Tun Hussein Onn Malaysia (UTHM) is done manually. The activity proposal must hand up manually by a student to the staff at Hal Ehwal Pelajar dan Murid (HEPA). The staff will evaluate the proposal by checking the format and detail of the proposal. The student also must bring along other support documents like a budget list. All the documents are managed manually which is in paper-based form and stored physically at the office of HEPA. All the activities proposed will be slotted to a certain slot for their representative to present their activity to the officer of the HEPA. During the presentation, the officer will ask questions regarding the activity and evaluate the activity. The result will be announced at the end of the presentation. If the officer rejects the activity, the student can re-edit and resubmit their proposal within the time given. Students need to collect their approval letters in the next week of the presentation. By using the approval letter, the student can now apply for the rental of the venue under (PPA). The student will first fill in an application form and pass it to the staff on duty. The staff will check the availability of the venue and proceed with the application of the student. The venue approval letter will be given to the student as a prove. Now, the whole application process is finally done.

To check the activeness of a certain society, the staff in HEPA has to manually check back the copy of the approval letter. This may result in an error during the review. Furthermore, the review process takes many times to complete. This can lead to a decrease in the effectiveness and man-power of HEPA. Any mistake cause will affect the activeness and reputation of a society. Therefore, there is a need for an online computer system and a computer database that can help staff easily to manage all the applications and increase process efficiency.

Therefore, the UTHM Online Activity Management System is developed to be the platform for all processes and to manage all the applications. There are three users involved in this system, which is society representatives, administration of HEPA, and administration of PPA. Society representative can upload their proposal online via this system. Meanwhile, the administration of HEPA can evaluate the proposal then arrange the presentation slot. The society representative can check the status of their proposal and know their slot for presentation. After they pass the presentation, the society representative can get their activity approval letter via the system and get used to the proposal and activity approval letter to apply for a venue. The administration of PPA will check for the availability of the venue and proceed with the application by sending a venue approval letter to the system if there is no other event held on the venue on the same date. The society representative will get to know whether their venue is approved and print out the venue approval letter for backing up. Lastly, the administration of HEPA can check for the summary of activity. Figure 1 the summarizes the existing process thought As-Is model.
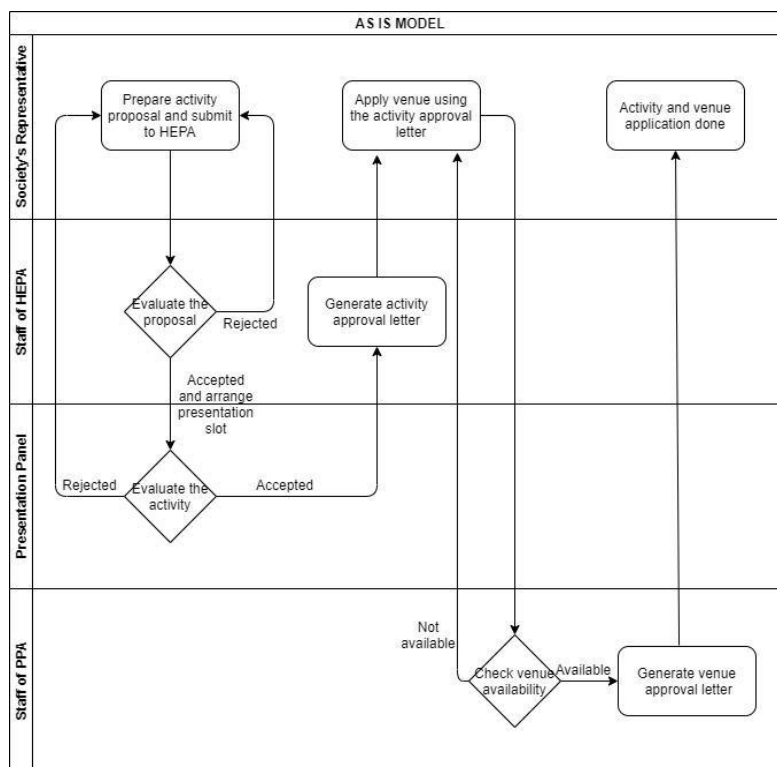
**Figure 1: As-Is Model**

## 2. Materials and Methods

### 2.1 Materials

The UTHM Online Activity Management System had been developed within the expected time given. The development of the system is divided into 10 Sprint and each Sprint consist of design, implementation, development, and testing. The design of the system is by using a URL diagram, which is use case diagram, activity diagram, and sequence diagram. The development of the system is by using C# as the coding language and "Visual Studio 2019" as the tools. The method used is Model View and Controller Model (MVC), which the user interacts with the view, controller control all the interaction and model as the database. The system consists of three user view which is student representative view, administrator of HEPA view, and administrator of PPA view. Lastly, the system had been uploaded to an online server by using "Microsoft Azure".

For completing all the activity in the system development life cycle that includes models, tools, and techniques [1], there is important to have a methodology as a guideline. To produce satisfying results throughout the system development, a systematic approach of the methodology is required. Technique-forming, collecting, and analyzing data to produce evidence supporting the ongoing operations can be produced by the assist of this methodology. It comprises the activity that needs to be done in Scrum which is Product Backlog, Sprint Planning, Developing, Texting, and Sprint release. In general, this chapter describes the software process model used in developing the UTHM Online Activity Management System.

### 2.2 Methods

In this project, the methodology used is Scrum. Scrum model is one type of agile model that is used to implement the software development life cycle (SDLC). Scrum was discovered in year 1995. It has already become very famous in these 10 years. Scrum is not a process or technique; it is a process framework that is used to develop, deliver and maintain complex software products [2]. The development way of Scrum can be known as an iterative and incremental method [3]. Compare to old

traditional method, like Waterfall, Scrum deliver the product by iteration of time or we can call it as Sprint. In some past software development, the final product developed is not what the customer needs. The developer needs to waste extra time and work more to change the whole system. This result in the wastage of manpower and resources. The avoid this from happening, Scrum always brings the customer constantly to the product and make sure the involvement of the customer. This can ensure the product is delivered in the way customers expectations. Figure 2 shows a slow process of Scrum methodology.
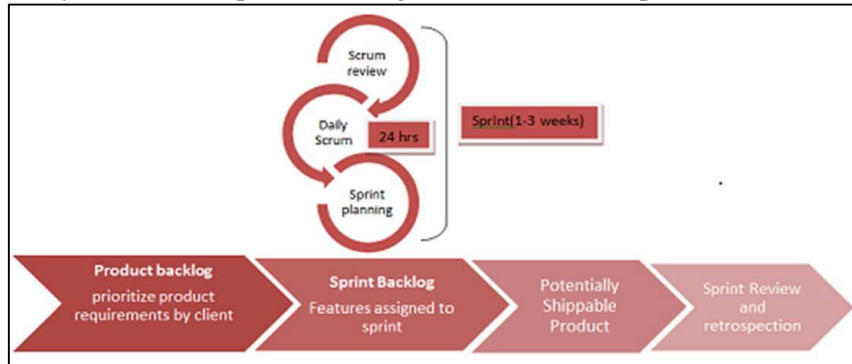


**Figure 2: Process of Scrum [2]**

From Figure 2, the product owner meets the customers (client) and asks for the business model and requirement needed at the beginning. After understanding the requirement and needs, a user story will be created and listed on the Kanban Board. According to the Kanban Board, the planning of the project is listed in a burndown chart. Later, a Sprint meeting will be conducted and choose one of the stories to develop. In this case, the interface design is the first user story. The customer will be again needed to involve and explain what he expects before the Sprint team starts to develop the user story. After two weeks, the product review will be carried out involving the customers and the Sprint team. If do not have any part need to modify, the Sprint team will move on to the next user story. The same process will be repeated until the whole system is completely developed.

2.3 User Stories

User stories are one of the most important artifacts for the Scrum project team. User stories are a short and simple description containing enough information from the end-user and a high-level definition of a requirement that is needed for the Scrum team. User stories usually follow a simple template which is "As a <type of user>, I want <some goal> so that <some reason>". All the user stories will be written on an index card or sticky notes and arrange on a wall to facilitate planning and discussion. The benefit of using user stories is the development team can understand the requirement requested from the customer as a user story able to cover a large amount of functionality. In this UTHM Online Activity Management System project, the user stories are written by the user of the proposed system before the start of the project. The user stories collected will be discussed. All the user stories will later be redefining, analyzed, and prioritize them. The user stories are listed in Table 1.

**Table 1: List of User Stories**

| ID | User Story |
|---|---|
| 1 | As the user of the system, I wish I can have a unique account that used to login to the system. |
| 2 | As a representative of a society, I wish I can submit all the paperwork including the proposal and others supporting document thought online. |
| 3 | As a representative of a society, I wish I can get know of the status of my activity and venue application via online. |
| 4 | As a representative of a society, I wish I can apply the venue of my activity using the online system. |
| 5 | As an administrator of HEPA, I wish I can manage all the activities application by using the online system. |
| 6 | As an administrator of HEPA, I wish all the application will saved in a database for future review. |

**Table 1 (cont.)**

| ID | User Story |
|---|---|
| 7 | As an administrator of HEPA, I wish I can view an overview report of all application sorted by categories. |
| 8 | As an administrator of HEPA, I wish I can add or delete a society. |
| 9 | As an administrator of PPA, I wish I can manage all the venue application by using the online system. |
| 10 | As an administrator of PPA, I wish I can view all the venue whether it already booked or available. |

2.4 Product Backlog

A Product Backlog is a prioritized list of the user stories that collected from end user. The Product Backlog of the project will also list out all features that needed in this product. The top item in the Product Backlog list will be the most important features of the project. Product Backlog is often used for the development team for them to know what requirement they should develop first. The Product Backlog is never complete, and it is dynamic. The Product Backlog will evolve as the product and the environment evolves. Changes in business rules, market condition or technology will also cause the changes in the Product Backlog. Based on the Product Backlog, the user stories is been divided into subtask follow by its priority. The higher the priority of the user story, the more important of the sub task. The list of subtask was listed in Table 2.

**Table 2: The subtask of each user story**

| ID | User story |
|---|---|
| 1 | • User can choose the activity application button<br>• User can submit document type file or pdf to the system<br>• The submitted document will be saved into a database |
| 2 | • User can view the application that submitted from the database |
| 3 | • User can evaluate the application before arranging a slot for the presentation<br>• User can arrange a slot for presentation if don't have any problem<br>• User can reject the application and leave a comment |
| 4 | • User can view whether his activity application had been accepted or rejected<br>• User can view the presentation slot arranged by administrator<br>• User can view whether his venue application had been accepted or rejected |
| 5 | • User can view a summary of all activity application at the end of the month sorted by category |
| 6 | • User can only login to the system by using the id and password<br>• After user login to the system, the user can use all the feature on the interface |
| 7 | • User can choose the venue application button<br>• User can input the detail and the code of his approved activity<br>• User can select the venue he wishes to held his activity |
| 8 | • User can approve the venue application if the venue is available<br>• User can reject the venue application and leave a comment if the venue is not available |
| 9 | • User can view the availability of venue |
| 10 | • User can edit the information of a society<br>• User can add a new society into the system<br>• User can delete an inactive society from the system |

2.5 Sprint

Sprint is the heart of Scrum. Sprint is a time-box, which a useable, potentially releasable product increment is created. Each Sprint will have consistent periods throughout a development effort. A new Sprint will start after the previous Sprint has done its conclusion. In each Sprint, it contains two important elements which is Sprint Planning and Sprint Goal.

Sprint Planning is created by the whole team member of this project. A meeting is conducted, and the input of the meeting is the Product Backlog and the latest product increment. With the reference to the Product Backlog, the team will choose some features as the Sprint Backlog and later discuss the time-box of the Sprint. After that, who will in charge of this Sprint and how will the chosen work get done will be discussed also. Meanwhile, Sprint Goal is an objective set as the target for the Sprint that can be met through the implementation of Product Backlog. The Sprint Goal is a guidance for the scrum team during the development. Sprint Goal is the result of the Sprint Planning meeting. During each Sprint, there is not allowed to make any changes that would affect the Sprint Goal. This is because will decrease the quality goals of the Sprint. It is advisable to re-negotiated between the Product Owner and the scrum team.

2.6 Sprint Release

Sprint Release is held at the end of the Sprint. Before the Sprint Release to the end-user, the Sprint will be inspecting the increment and adapt the Product Backlog if required. The Scrum Team and the stakeholders will collaborate on what had been done in this Sprint. We called this process a Sprint Review. The Product Owner will explain what had been complete and what has not been completed. Then the Product Owner will describe the function and features that developed in this Sprint so stakeholders can know whether the system is developed in the way they wish. Then the Development Team will discuss the problem that they faced during this Sprint. The Development Team also will review the timeline, budget, and marketing potential of the Sprint and might have changed what features is the most valuable. All the discussion and result in the Sprint Review will be recorded and as a revised Product Backlog that defines the probable Product Backlog items for the next Sprint. After the review, the Sprint now can be released, and the Scrum Team will be started to plan their next Sprint.

2.7 Sprint Planning

Based on the subtask listed in Table 2 shown above the development of Sprint will follow the priority level of each subtask. The Sprint will keep on release and develop until the whole system is completely developed.

## 3. Results and Discussion

The UTHM Online Activity Management System had been developed within the expected time given. In Figure 3, it can be seen the login page for all users. At first, the society's representative can choose the activity application button and submit a document type file or pdf to the system as in Figure 4. All the submitted documents will be saved into a database. The activity application button will transfer the Society's representative to the side of Activity Application. In the Activity Application side, there is a button that able to let Society's representative upload the proposal and other relevant documents from his computer to the system. After that, all the uploaded files will be saved into the database of the system for the evaluation purpose of the Administrator of HEPA and appeared as in Figure 5.
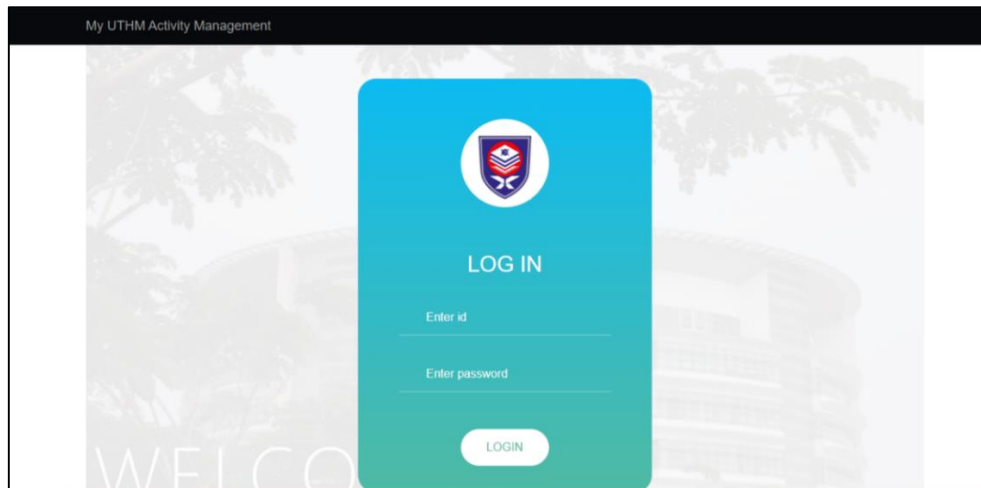
**Figure 3: Login Page of UTHM Online Activity Management System for all users**
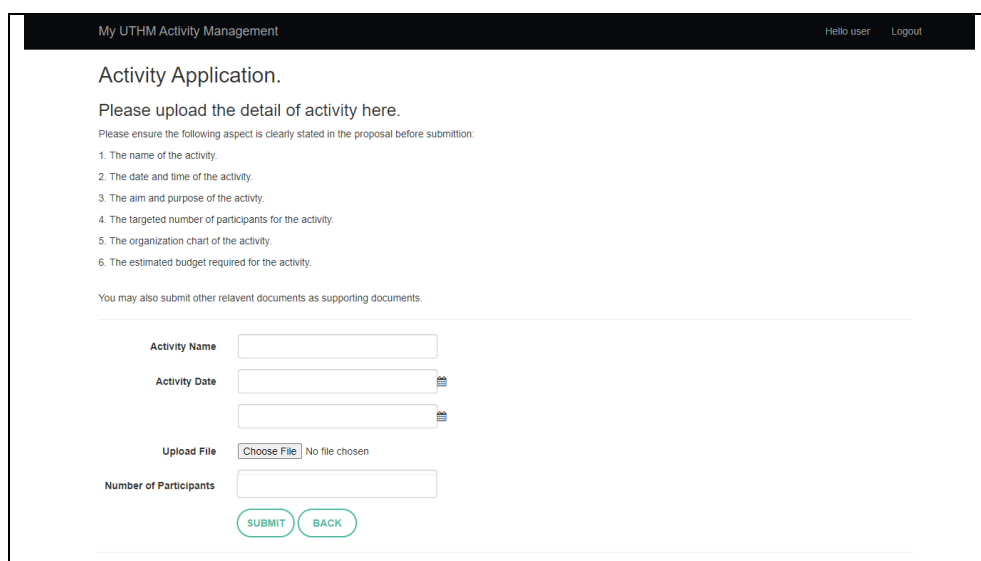


**Figure 4: Activity Application page of the system for Society's representative**
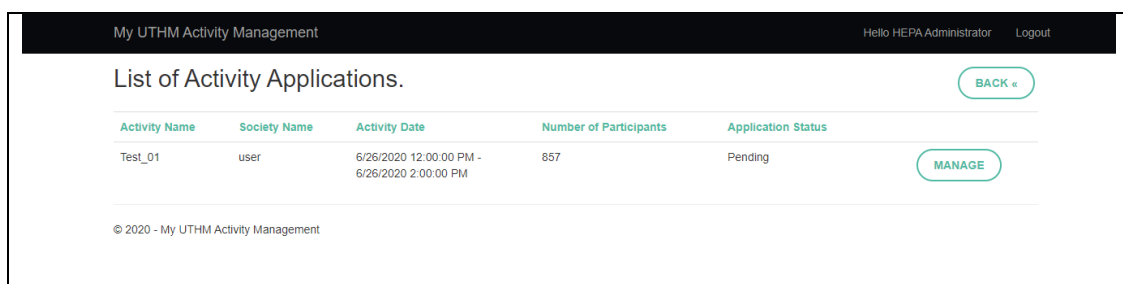


**Figure 5: Activity Application page of the system for Administrator of HEPA**

From Figure 5, the administrator of HEPA can view the application submitted by the Society's representative. After press the Activity Application Review button, the system will transfer the Administrator of HEPA to the Activity Application Review side. On this side, all the uploaded files will be displayed here according to date. The Administrator of HEPA can evaluate each activity as shown in Figure 6.

**Figure 6: Evaluate of activity application**

The administrator of HEPA will evaluate the proposal based on nature and budget. Once the administrator has done his inspection, the administrator will arrange a slot for the presentation. The administrator of HEPA will change the status of the activity once the activity had been approved. An activity approval letter is generated by the administrator and uploads to the system. After the activity had been accepted, the representative can apply for the venue of the activity that was written in the proposal. The administrator of PPA will check the availability of the venue and proceed with the application if the venue had not been booked. Lastly, the administrator will update the venue application status into the system. Next, the user can search the activity applications using the date of the activity. On the same page, there is a search bar on the top right. The administrator of HEPA can search by inserting the range date he wishes as shown in Figure 7.



**Figure 7: List of all activity application recorded in the database**

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The administrator of HEPA can view all the activity applications under the "View Application's Statistics" page as in Figure 8. All the activity applications were sorted based on the progress of the activity, which is "Accepted", "Rejected" and "Pending".
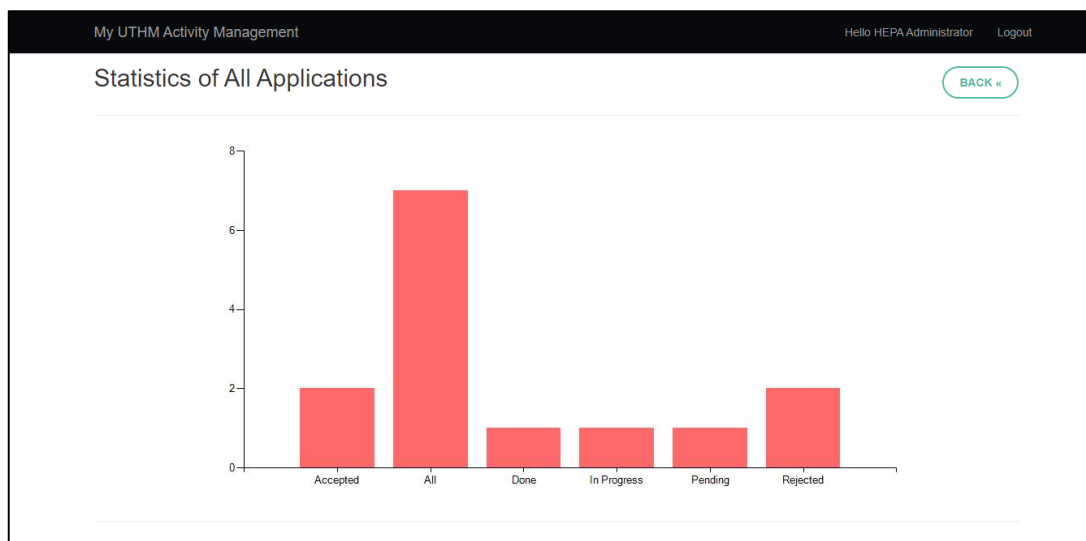


**Figure 8: Statistics of all activity applications**

## 4. Conclusion

UTHM Online Activity Management System had been successfully design, implement, develop, and testing. In the last chapter, the overall conclusion of the system including the advantages, disadvantages and future suggestions are discussed to improve the system in the future. Few advantages are identified in UTHM Online Activity Management System such as:

i. The system helps to reduce the usage of paper since all the processes can be done online.
ii. The system is easy to be understood by user and user friendly.
iii. The administrator of HEPA and PPA able to manage all the activities and venue applications easily and also able to manage society by adding and delete the account.

However, we had been identified a few disadvantages of UTHM Online Activity Management System such as:

i. The administrator of HEPA unable to edit the details such as name and user type of an account.
ii. The system did not generate a notification for society's representative on the latest progress of their application.
iii. The administrator of HEPA and PPA unable to change the decision that had been approved.

The suggestions below can be made to improve the quality of the system. Those suggestion are as following:
i. Society's representative can view the statistics report on the applications that had been made.
ii. A notification will be generated and send to society's representative via inbox of the system or by email once their application has new progress.
iii. Provide more venue selection for society's representative and allow them to insert venue that not listed in the system.

## Acknowledgement

## References

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