

## THE DESIGN OF *F-CMS*: A FLEXIBLE CONFERENCE MANAGEMENT SYSTEM

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**ABSTRACT.** Conference management system (CMS) is designed to help the conference committee manages a conference well. The CMS which is available in market nowadays provides a well managed pre-conference function such as paper reviewing, paper submission, and participant registration system. However, payment module is not given priority by the existing CMS. This study argues that the payment management is importance ant to simplify the payment process, avoiding the unpaid paper being published in the proceeding. Also the conference committee can easily calculate the conference profit when the event ends. However, CMS is inflexible handling certain cases such as in case authors are unable to pay the fee before the conference day but need to submit the camera ready. Hence, this paper attempts to explain the design of a flexible conference management system (*f-CMS*). *f-CMS* is developed using RAD approach. It also includes the registration module during conference day. This paper presents the review of literatures and the early stages of the development of *f-CMS*.

Keywords: Conference Management System (CMS), *f-CMS*, RAD

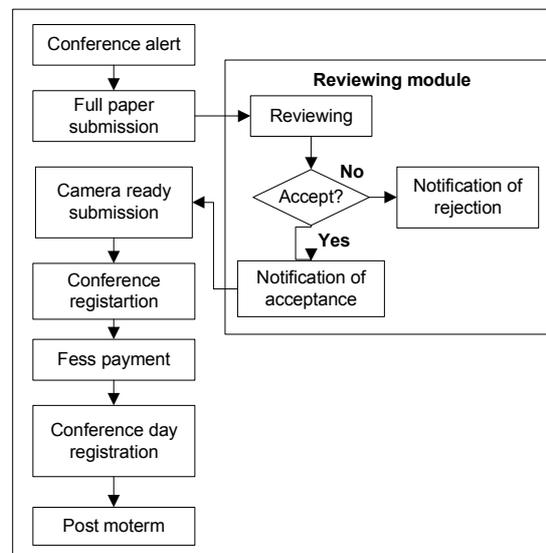
### INTRODUCTION

In a year, there are many conferences organized over the world. According to the ACM calendar of event 2011, there are approximately 25 registered conferences organized in January and February. Also known as symposium, workshop, or seminar; conference is organized yearly and some of them are in a series of two years. There are many motivations to attend conferences; in which they allow people to share research findings, seek new research areas, develop networking and meet experts (Abdul Wahab et al., 2007). To achieve the conference objectives, the conference committee needs to manage the event well starts from the beginning of the conference alert until the event ends. A good conference management is one of the criteria of the conference successfulness.

Currently, there are many conference management systems (CMS) available with the aim to help the conference committee organizing conferences systematically. With the accessibility of the Internet, most of the CMS are available in web-based environment. It eliminates the geographical boundaries. The examples of CMS are CyberChair ([www.cyberchair.org](http://www.cyberchair.org)), EDAS (<http://www.edas.info>), CONFIOUS (<http://www.confious.com>), ConfTool (<http://www.conftool.net>), (<http://www.confmaster.net>) and KMICe-eX ([www.kmice.uum.edu.my](http://www.kmice.uum.edu.my)). The CMS supports major conference activities

such as electronic paper submission, online paper reviewing and managing participant registration.

Generally, conference management works are divided into three phases; pre-conference, during-conference, and post-conference. The pre-conference phase involves conference alert, abstract and full paper submission, allocating paper to reviewer, notification to the authors, payment, and participant registration. During-conference phase refers to the day of the conference. In this phase, it includes managing the participant attendance, checking the participant payment, distributing the conference kit, and managing the conference session. Finally, when the conference ends, conference committee should conduct the port-mortem, finalizing payment, and produce reports. The final part is called the post-conference. Figure 1 summarizes illustratively the process of managing a conference as discussed in this paragraph.



**Figure 11: Activities in managing a conference**

The most important activities in managing a conference fall in the pre-conference phase. The process starts from the conference alert, full paper submission, allocate paper to reviewer, notification to the authors and participant registration. Those processes are supported by most CMS in the market nowadays.

However, current CMS are moving forward to integrate the payment facilities. The automated payment management can help the conference committee simplifying the payment process as well as calculating the conference profit. From the literature, there are two types of payment methods; (1) by credit card and (2) wired transferred; and it must be paid before the conference day. The failure of authors to make payment before the due date will cause their camera-ready not submitted to the CMS. This function is helpful in eliminating the unpaid accepted papers from getting published in the proceeding. However in certain situations, this becomes inflexible. The problem arises with authors who are unable to pay before the due date. In certain countries such as Malaysia, the payments of sponsored authors are normally received during or after the event day due to their organization's payment policies. The payment method via cheque, invoice, company vote, or government order requires more time to process. It is usually received after the conference ends.

The inflexibility in managing fees payment mainly by the presenters will cause difficulties for the conference committee to select only the paid papers to be included in the proceeding.

The time concern in this stage is that it can delay the printing of proceeding. There is also a possibility that the unpaid paper will be included in the proceeding. On the authors' side, they cannot submit the camera-ready if their organization pays the fees late. In KMICe 2010, out of the 120 accepted papers, 28 papers were paid after the camera-ready submission date was due. To avoid this problem, the current practice by the conference committee is to use any CMS to manage the pre-conference task such as paper submission, paper reviewing, and registration. Then they use separate software such as spreadsheet to handle payment and participant registration during the conference day and manually prepare conference report when the event ends.

Therefore, a CMS with a flexible payment management and registration module called flexible Conference Management System (*f-CMS*) is designed. This paper presents the review of literatures and the early stages of the development of the *f-CMS*.

### CONFERENCE MANAGEMENT SYSTEM (CMS)

There are many CMS available in the market. Most of the CMS are firstly developed for a specific conference purposed but later were commercialized for other conferences. Cyberchair is a free web based system and it is developed to support the review process of conferences, workshops, and journals. Developed in 1996 for Conference on Object Oriented Programming (*ECOOP*), Cyberchair facilitates the conference committee in pre-conference activities such as assigning paper for review, storing author registration, and automated paper acceptance notification (Stadt, 2010). It is also capable of comparing the reviews of multiple authors, points out conflicts and easy means of communication to resolve these conflicts. In addition, it can also facilitate the conference committee to select the best paper and prepared the table of content for the proceeding. However, there is no payment module in Cyberchair.

Then, Gol et. al. (2004) developed a CMS to manage international conference. The system supports the pre-conference activities without any module for payment facilities. The system was designed based on the requirement of University of South Australia.

Further, Chairman (Levovic, 2005) was developed. It is an open-source-based CMS that offers facilities as found in Cyberberchair but with payment facilities. Chairman paper management is more systematic compared to Cyberchair. It supports tasks in collecting full paper, assigning paper to reviewer, paper notification, participant registration, and payment management. Besides that, chairman provides flexible interaction capacities between the conference committee, reviewers, presenters, and session chairs.

Papagelis and Plexousakis (2007) developed CONFIOUS, a CMS which combines modern design, sophisticated algorithm and powerful engine to help the conference committee chairs to effortlessly accomplish complicated tasks and deliver the best experience to both reviewers and authors. Besides supporting multi-conference events, CONFIOUS has a good mechanism in managing papers for review. It has been used by several conferences and journal such as HDMS 2010, RCC 2010, S-ICT 2008, and Journal of Web Semantics. However, similar to Cyberchair, there is no payment facility in the system.

Besides, the Editorial Access System (*EDAS*) has also been developed. It also serves the needs of workshops and journals (Edas 2011). Users who want to use *EDAS* needs to register first. *EDAS* supports all functions which are covered by CONFIOUS and has capabilities to broadcast conference alerts to *EDAS* registered users with similar technical interests. It also supports multi conference registration whereby *EDAS* users may submit papers to more than one conference using the same login. In addition, *EDAS* is also integrated with the IEEE Submission System to manage copyright. Besides the well managed paper reviewing system,

EDAS also has advantages at handling the payment by participants. It supports telegraphic transfer and credit card which is connected to merchandizing bank. By using this facility, the authors must first pay the conference to submit the camera-ready otherwise the function is disabled to them. From the records until January 2011, there are nearly 250 conferences and workshops organized in the year 2011 utilizing *EDAS* as a conference tool.

The *KMICe* extended version (*KMICe-eX*) is purposely designed to manage the Knowledge Management International Conference (*KMICe*) in 2004 (Wan Hussain Wan Ishak & Syamsul Bahrin Zaibon, 2008). Under the requirement of Universiti Utara Malaysia, the system has been continuously improved for the use of *KMICe* conference series in 2004, 2008, and 2010. *KMICe-eX* supports dynamic features such as online registration, online paper submission, and online reviewing assignment. It is incorporated with an advanced feature, which is automated generation of abstract book and proceeding. This feature enhances the CMS and reduces a lot of works on the conference committee part. The success of the system has been attracted several conference organizers to use *KMICe-eX* such as, *ICOCI 2009*, *IVIC 2009*, and *RICTD 2010*. However, *KMICe-eX* does not support payment facilities.

Based on the models of CMS discussed in the paragraphs previously, this study found that the payment module is important in managing conference online. In fact, the payment module should be flexible to cater specific needs by people who are sponsored by their organizations. Hence, this study proposes a model of the CMS called *f-CMS*.

### THE DESIGN OF *f-CMS*

The *f-CMS* is designed to assist the conference committee managing the pre-conference, during conference, and post-conference activities smoothly. It supports single conference registration. Similar to the other CMS, the target users of the *f-CMS* are the conference committee, reviewers, and participants. In detail, the participants are the presenter (author) and listener. In addition, *f-CMS* is a web-based application and the communication and notification with users are via e-mail. There are 5 main modules in the *f-CMS*; Paper Submission, Participant Registration, Reviewing, Committee, and Payment. Figure 2 summarizes the *f-CMS* modules illustratively.

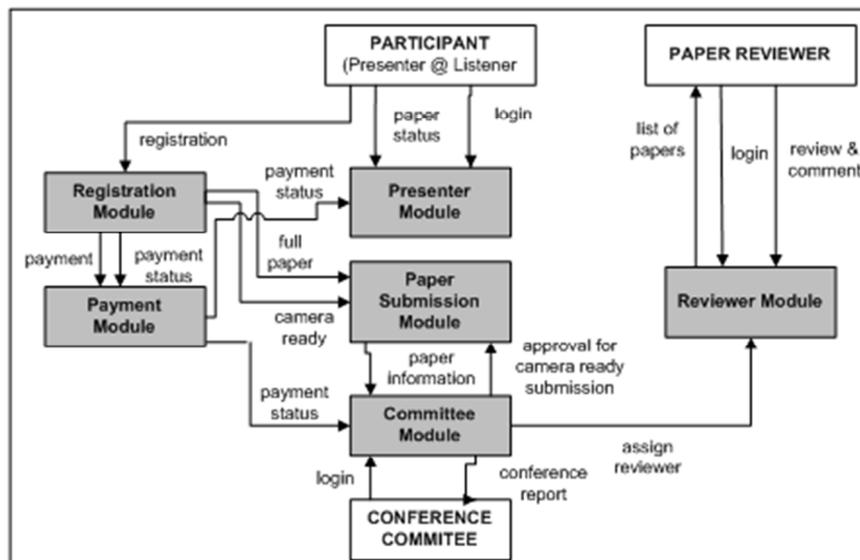


Figure 2: The *f-CMS* modules

### **Participant Registration Module**

Each participant needs to register to the system like in EDAS. For presenters, they can upload the full paper after completed the registration. This module is used as reference during conference registration when the event begins. On the event day, the participants can mention their name or paper id for registration. However, if they have not paid, they cannot register and need to proceed to payment counter.

### **Presenter Module**

This module is purposely provided to facilitate presenters managing their paper submission. Through this module, they can submit papers, view paper status, view payment status, submit camera ready file, and edit personal profile.

### **Submission Module**

There are two types of submission – full paper and camera ready. The full paper submission is opened to all registered presenters and the camera ready file function is only active for those who have paid the conference fees. Otherwise, they must get approval from the conference committee. Presenters can upload and re-upload papers and is also allowed to submit more than one paper. Each paper will be given one unique id.

### **Reviewer Module**

Reviewer module is developed to manage the reviewing process. The reviewers will be invited via email and their account will be created once they accept to be a paper reviewer. In this module, reviewers can edit their preference and view the list of papers to be reviewed. They are given the authority to decline or accept which papers to be reviewed. Once accepted, the reviewers can begin the review and fill in the online review form. Each reviewer is given 14 days and by default they will receive two papers to review.

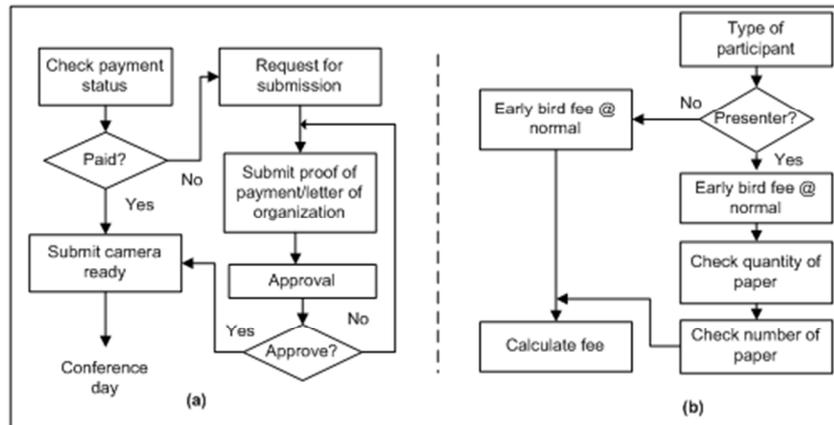
### **Conference Committee Module**

The conference committee module serves as the control unit of the *f-CMS*. It allows the conference committee to manage conference participant, reviewer, submission, committee, conference information, and report. In the conference participant module, the conference committee can view participant detail, view list of participant, view list of papers, and check the payment status. In reviewer section, the conference committee can create account reviewers' account, assign papers to reviewers, and set the number of days for reviewing. Besides that, the conference committee is also authorized to decide whether to accept or reject the paper after it has been reviewed. Then, the submission panel will let the conference committee to consider whether to allow any author to submit the camera-ready before the due date. Meanwhile in the committee and conference information module, the conference committee can create committee profile and update the conference information. Finally, there is a report page, in which the conference committee can generate report regarding the participant, reviewers, papers, payments, profits, and registration.

### **Payment Module**

The payment module is to help the conference committee managing the payment. For presenter, all payments must be received before the conference day or they are unable to submit the camera-ready. However, they can request for approval to submit their camera-ready before settling the payment. To get the approval, they must send request by fill in a specific form, and then upload/fax the confirmation letter or the proof of payment to the conference committee. Once it has been approved, a notification will be sent to them. The types of payment include credit card, bank transfer, cheque, and general order (which is only

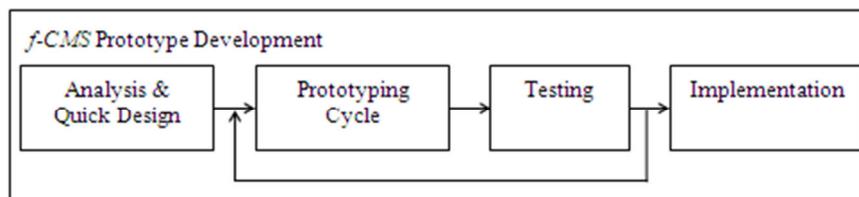
applicable for Malaysian only). In contrast, the listeners have options to pay either before the conference day (with discounted amount) or during conference day. Besides that, this module also includes the total fees calculation. Figure 3(a) and 3 (b) summarize the payment process in *f-CMS*. In detail, Figure 3 (a) represents the process of managing the payment and getting approval for camera ready submission while Figure 3(b) is the process of calculating the total fees.



**Figure 3(a): The process of payment management and getting approval for camera ready submission. Figure (b): The process to calculate the fees amount.**

## THE DEVELOPMENT METHODOLOGY

The *f-CMS* is currently in the early stage of development. It is developed using the Rapid Application Development (RAD) methodology, a software development methodology proposed by James Martin in 1991. It involves iterative development approach in the prototype development (Jerrey & Lonnie, 1998). RAD has four phases as outlined in Figure 4 that are analysis (defining the *f-CMS* user requirement), prototyping (designing the *e-f-CMS* based on requirement), testing (verifying the requirements and formally refining the data and process model), and implementation (combining requirement and technical design to fully construct *f-CMS*). *f-CMS* is developed using a combination of Active Server Page and Microsoft SQL Server 2000. The Figure 5 captures the preliminary interface design of the payment module.



**Figure 4: The RAD approach used in *f-CMS***

## CONCLUSION

The *f-CMS* is currently in the development stage. The improvement will be conducted from time to time. Based on the limitations found in the existing models as discussed in previous paragraphs, many additional functions need to be included in the *f-CMS* such as selecting the best paper, schedule the paper presentation, integrating payment with bank merchant and creating online book of abstract.

It is expected that with the flexible design, the *f*-CMS could eliminate the problems in payment management. More importantly the *f*-CMS team looks forward to avoid the unpaid papers being published in the proceedings.



Figure 5: The preliminary prototype design of payment module

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