

Bio-Diversity Ride for Khazanah Alam Mountain Bike Jamboree Online Registration System

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Abstract: Bio-Diversity Ride for Khazanah Alam Mountain Bike Jamboree or also known as Khazanah Alam Jamboree was conducted to celebrate 30 years of Universiti Teknologi MARA Pahang. Due to the Information Technology growth, the registration system for this event was done using on-line registration system. This online registration system replaces the existing manual registration procedure that has many drawbacks. Manual registration system used paper forms and sometimes phone calls or e-mails. The issues that always occur when using manual registration system are data redundancy, data loss, difficulty to estimate the number of participants and groups and difficulty to estimate the number of t-shirts to be ordered. The objectives of this system were to simplify the registration and payment process. Another objective was to reduce problems occurring when using the manual registration system. The method used to develop this system was Dynamic System Development Method (DSDM) that has five main processes. This system had three types of users which were system moderator, riders and public. This system reduced time and procedure for registration and payment process. It gave a lot of benefits for committees, riders and public.

Keywords: Online Registration, Manual Registration, Ride

1. Introduction

The Bio-Diversity Ride for Khazanah Alam Mountain Bike Jamboree (MTB) was conducted by Khazanah Alam Mountain Bike Club Universiti Teknologi MARA Pahang or also known as KAMC UiTM Pahang (MTB Admin, 2015) to celebrate the 30th anniversary of UiTM Pahang. The distance for this ride is about 45 km and involved almost 1000 riders from all over Malaysia. MTB participants were divided into five categories, namely junior (men), elite (men), master (men), veteran (men) and open (women). KAMC had previously organized four events prior to the MTB and had used the manual registration system in those events.

The manual registration system requires participants to fill out a form that can be printed from MTB blog and send the form to the MTB committee by email, by post or by hand. After that, MTB committees will key-in the data from the forms into Microsoft Excel and update the participants list in the MTB blog. Several problems were encountered when using this manual registration system.

The problems encountered were described as below:

1.1 Unreliable data

This problem is caused by human error such as typo error or the MTB committee missed keying in some data. This problem may contribute to poor filing system that led to misplacing some entry forms or the forms sent by post were not received by the committee.

1.2 Time Consuming

This issue affected committee members and event participants. Participants felt it was time consuming to fill out the manual form and also to return the form to the committee. Participants also felt it was difficult to confirm their registration status because they had to wait for the committee to key-in all the participants' details into Microsoft Excel and then update the latest participant list into the MTB blog.

Each participant will get goodies and t-shirt based on their category and t-shirt size. Another problem faced by the committee was difficulty to estimate the number of goodies and t-shirts to be ordered because it took some time for the committee to update the participants list.

The significance of the online registration system is that it could solve the problems mentioned in this research. Funride Kesuwip 2015 and Jambatan Sultan Abdul Halim Muadzam Shah (JKSB) Ride 2015 had used online registration system prior to the MTB, starting with the putting up the name list until the payment process was completed. They used the in-house software to create and maintain their registration system. Many other bicycle ride events also used the online registration system either using in-house software or using an application that was built and maintained by software service provider. So, it is essential to use the online registration system either to speed up the process or to eliminate all the problems faced by the manual registration system.

Online registration was used for the latest program conducted by KAMC namely the MTB to overcome the problem listed above. This online registration system used the previous BlogSpot as a base to link with the online registration system. This online registration system was developed to reduce problems and also to simplify the registration and payment process. According to Steel(2004a, 2004b), by definition, 'online' means "controlled by or connected to a computer or internet" and 'registration' is "putting name on an official list". Based on these definitions, online registration means the process of inserting or including the name and some details into the registration list by using the internet technology. So participants from all over Malaysia and also all over the world can easily register and join the event as long as they have internet connection using smart phones, tablets or any Information Technology gadget. Details of online registration system will be discussed in finding section.

2. Literature Study

This section will explain the registration system of other ride events and will compare them with the MTB online registration system.

2.1 Funride Kesuwip 2015

As stated by Ahmad Rizuan (2015), Funride Kesuwip 2015 was conducted by Kelab Sukan dan Kebajikan Wisma Persekutuan (KESUWIP) Seberang Perai Utara in conjunction with the 5th year of KESUWIP operating. This event used website service provider namely CyclingEvents.my as the registration and payment platform. Funride Kesuwip 2015 BlogSpot provided a hyperlink to CyclingEvents.my for registration and payment purposes for this event.

CyclingEvents.my acted as a platform for cycling online registration and payment process owned by Sports Event House Sdn. Bhd. (Sports Events House Sdn. Bhd., 2015). The online registration and payment process provided by CyclingEvents.my is very easy to use and user friendly. The similarity between MTB online registration system and CyclingEvents.my is the online registration process used a similar step but differences is mainly the choices of payment method. MTB online registration system only gives the rider two choices to make a payment. The choices were by cash or manual bank-in only. Whereas, CyclingEvents.my gave many other payment methods like through online secured payment such as debit/credit card, maybank2U, CIMBClicks and AMOnline.

2.2 Jambatan Sultan Abdul Halim Muadzam Shah (JKSB) Ride 2015

The committee for this event used the Howei Online Event Registration provider as a platform for registration and payment (Caritech Software Malaysia, 2015). Howei page is designed and maintained by software house company namely Caritech Software Malaysia that created a website based on JKSB Ride Committee requirements (Software Malaysia & HRMS Service Provider, 2015).

The differences between this registration system compared to MTB's system is also mainly in payment method issues. The event committee allowed participant to make a payment by using debit/credit card or through internet banking only. But does not provide the choice to participants to do a manual bank-in or cash payment. Another process is similar with MTB online registration system and Funride Kesuwip 2015 online registration system.

Funride Kesuwip 2015 and JKSB Ride 2015 used software house provider for their online registration system and payment process. Whereas MTB committee developed in-house software to fulfill committee requirements and simplify the registration and payment process. But many improvements should be done and will be discussed in result and discussion section.

3. Method

This system started the planning process on 6th March 2014 and completed the maintenance process on 29th May 2014. Dynamic System Development Method (DSDM) was used as a method for system development. **Fig. 1** shows the duration or day utilized and **Fig. 2** shows the Gantt Chart that determine the timeline for each task during a development of this system.

ID	Task Name	Start	Finish	Duration
1	Planning – Problem Identification	6/2/2014	6/3/2014	2d
2	Planning – Problem Investigation	6/4/2014	6/13/2014	8d
3	Analysis – System Req. Collection	6/16/2014	7/4/2014	15d
4	Analysis – Construct & Release Database and System Conceptual Design	7/7/2014	7/25/2014	15d
5	Design – Construct and Release Database and System Logical Design	8/4/2014	8/22/2014	15d
6	Implementation – Physical Database Construction	8/25/2014	8/29/2014	5d
7	Implementation – Begin Source Code Writing	9/1/2014	10/31/2014	45d
8	Implementation – System Testing	11/3/2014	11/7/2014	5d
9	Implementation – System Installation, Deployment & Server Testing	11/10/2014	11/19/2014	8d
10	Maintenance – System Monitoring and Upgrades	11/20/2014	5/29/2015	137d

Fig. 1 Task Duration

ID	Task Name	Start	Finish	Duration	2014												2015											
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Planning - Problem Identification	8/2/2014	8/5/2014	3d																								
2	Planning - Problem Investigation	8/6/2014	8/11/2014	5d																								
3	Analysis - System Req. Elicitation	8/12/2014	8/18/2014	7d																								
4	Analysis - Current & Reference Database and System Contact Form	7/9/2014	7/29/2014	19d																								
5	Design - Create and Refine Database and System Logical Design	8/12/2014	8/23/2014	11d																								
6	Implementation - Physical Database Construction	8/25/2014	8/29/2014	5d																								
7	Implementation - Begin Source Code Writing	9/1/2014	10/1/2014	30d																								
8	Implementation - System Testing	11/30/2014	11/30/2014	1d																								
9	Implementation - System Installation, Deployment & Service Handing	11/30/2014	11/30/2014	1d																								
10	Maintenance - System Monitoring and Upgrades	11/29/2014	12/30/2015	131d																								

Fig. 2 Timeline

Bio-Diversity Ride Online Registration System used Dynamic System Development Method (DSDM) that is an agile method that received the ISO 9001 certification (Nor Hasikin Bt Husian, 2007). The discussion on this method is based on DSDM Process Lifecycle as shown in Fig. 3.

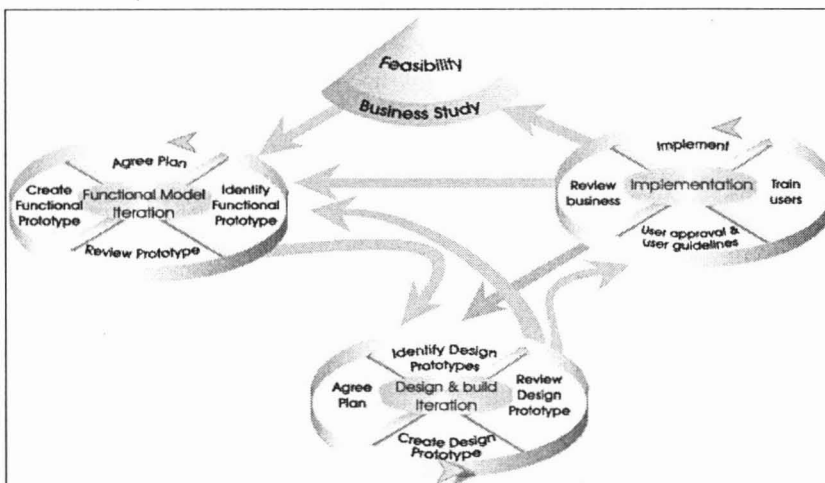


Fig. 3 DSDM Process Lifecycle (Stapleton, 1997)

Further discussion on DSDM Process Lifecycle:

3.1 Feasibility and Business Study

DSDM process lifecycle started with a feasibility study that defined the scope and investigated either this project will fulfil the required business needs. This feasibility study produced a feasibility report, outline plan, project schedule and also risk log. Then, the business study refined the feasibility study by producing a business area definition, prioritized requirement list, development plan and updated risk log. Other processes did not start yet until the development team was satisfied with the feasibility and the business study phase.

3.2 Functional Model Iteration

There were four sub-stages in this phase namely identify functional prototype, agree plan (schedule development), create functional prototype and review prototype. This phase started with user involvement by the developer showing the prototypes and doing tests on the functional prototype. This phase produced a functional model and prototype.

3.3 Design and Build Iteration

This phase carried out four sub stages namely identify design prototype, agree plan (schedule development), create design prototype and review design prototype based on comments or suggestions from the user in the functional model iteration phase. This phase produced a fully designed prototype and user documentation.

There were many softwares used for design and build iteration phase. Starting with design process, the softwares used were Microsoft Visio and MySQL Workbench. Microsoft Visio was used for system and logical design and MySQL Workbench was used for Database Management System (DBMS). Then the programming language choosed for this system was PHP because it is suitable for web based application. Furthermore, the development software used in this system were Adobe Dreamweaver CS3, Notepad++ and DBTools Manager.

3.4 Implementation

This was the last phase where the system was delivered to the end user and in this case, the system was delivered to KAMC registration committee and related KAMC functional committee. This phase had four sub-stages namely user approval, train users, implement system on-site and review system. In the review phase, the phase may return to the functional model iteration phase or eventually delivers the final system.

Dynamic System Development Method (DSDM) is one of the popular method used for software development (Nor Hasikin Bt Husian, 2007).

4. Results and Discussion

Detail of the Bio-Diversity Ride online registration system are described in Table 1 below. This table is based on user types, functionality and description.

Table 1. Bio-Diversity Ride Online Registration Functional Requirements

User Type	Functionality	Description
System Moderator/ Registration Committee	View Statistic Figure	The System Moderator is able to view the statistic figures for further actions such as t-shirt printing, riders status, team status and etc. 1) Total of all riders 2) Total riders according to individual and team classifications 3) Total riders for each competition categories 4) Total riders for each t-shirt size
	Register rider (Individual & Team)	The Moderator is able to register any rider. This screen is optional because riders need to register by themselves unless they are unable to do so due to certain reasons.
	Update payment status	The Moderator needs to update payment status for all riders in order for them to compete in the competition.
	Generate reports	The Moderator is able to generate reports such as list of teams, list of riders in PDF or MS Excel format.
Rider	Register rider	Riders need to register by themselves by creating a system account. Next, update the required details including list of team members (for team classification).
	Update detail	Riders are able to change any details allowed by the

		system.
	View payment & participation status	This screen will display participation status once the Moderator has completely updated the payment status for all riders.
Public	View all riders	Display all registered riders and participation status.

Based on Table 1, there are three categories of user namely moderator, riders/participants and public. Public only can view registered riders and their status. Whereas rider or participants can do online registration by creating their own account and input all required information. Rider also can update certain detail they have filled during registration process and view payment they have made through cash or manual bank-in. The last and very powerful user in this system was system moderator that can view statistic details such as number/list of paid/unpaid rider, number of t-shirts based on size and number/list of rider based on category. Moderator also can register riders that still used the manual entry form. Other functions that can be done by the moderator are update payment status after the rider has send the proof of payment through email or short messaging system (SMS). The last function that can be done by the moderator is generate reports such as list of teams, list of riders in PDF or MS Excel format.

Fig. 4 shows the Bio-Diversity Ride front page. As mentioned above, there are three types of user named as administrator, rider and public. The rider will do the registration process by using a registration form as shown in Fig. 5. In addition, an Administrator also has an access to use the registration form to help riders with no internet connection or who sent the manual entry form to complete the online registration process.



Fig. 4 Bio-Diversity Ride Front Page

Fig. 5 Bio-Diversity Ride Online Registration Form

As the output, Fig. 6 shows the MTB Jamboree Dashboard that will display the statistic figures based on administrator requirements. Another output for this system is Rider List Details as shown in Fig. 7 and Jamboree Payment Status as shown in Fig. 8.

Registered Riders		Paid Riders		Unpaid Riders	
824		721		103	

Individual Rider		Team	
10		95	

Category	Count
Juniors	36
Elite	343
Master	207
Veteran	142
Women	78
Total	653

T-Shirt Quantity	
Size S	80
Size M	215
Size L	114
Size XL	101

Fig. 6 Bio-Diversity Ride Statistic Details

Rider No	Name	Category	T-Shirt size	Team	Payment Status
1	0001 SALISURI BIN HAJI JAFAR	Master	L		PAID
2	0002 WAN MUHAMMAD HAZRI BIN WAN ADI BAKAR	Master	M		PAID
3	0003 MOHD SHAHRIL ZAKARIA	Elite	M	HEAVY 66	PAID
4	0004 MOHD HAFIZ HASSAN	Master	XXL	HEAVY 66	PAID
5	0005 ISHARAH	Elite	XXL	HEAVY 66	PAID
6	0006 MOHD ATE FADHLI	Elite	L	HEAVY 66	PAID
7	0007 MOHD SHAH MOHD AU	Veteran	XXL	HEAVY 66	PAID
8	0008 ROZI SAID	Veteran	L	HEAVY 66	UNPAID
9	0009 SHEKH ALI SHEKH MUSTAPHA	Master	M	HEAVY 66	PAID
10	0010 SUHAIMI RIDWAN SALIK	Master	M	HEAVY 66	PAID
11	0011 MOHD AZI ISMAIL	Master	M	HEAVY 66	PAID
12	0012 MOHD MOOR KHALID	Elite	M	HEAVY 66	PAID
13	0013 MUHC SAGAFUDIN KHALID	Master	L	HEAVY 66	PAID
14	0014 SH ERUSUF ZAKA	Master	XL	HEAVY 66	UNPAID
15	0015 SUKINOMHARU NAJID BIN HAYATI OTHMAN	Elite	L	HEAVY 66	PAID
16	0016 ROSZALAN B JOHANN	Master	S	HEAVY 66	PAID
17	0017 JEFERY ALBAR BIN BAKRI	Master	XXL	HEAVY 66	PAID
18	0018 NIK FAROUZAN BIN NIK SU	Master	L	HEAVY 66	PAID
19	0019 WAN KONG SUW	Veteran	L	DAUC	PAID
20	0020 SY MOHD ALIAN BIN W MOHD YUSOF	Elite	M	HEAVY 66	PAID
21	0021 MURAMBAH NAZRI BIN RAJAL	Elite	M	HEAVY 66	PAID
22	0022 MOHD SAHRI ABDULLAH	Veteran	L	HEAVY 66	PAID
23	0023 AMBAC ASTRIAN BIN MOHDI YUSOF	Elite	L	HEAVY 66	PAID
24	0024 MOHD BANHARUZZIN BIN HASSAM	Elite	L	HEAVY 66	PAID
25	0025 SUZMAN BIN AMR	Elite	L	HEAVY 66	PAID

Fig. 7 Jamboree Riders List

No	Team Name	Sponsor	Team Leader	No of Members	Payment Status	Update
1	ZIN (CENTURIE CYCLIST)	NON SPONSORED	KORANG JAWABER HOKIAE	6	CLEAR	Update Payment
2	SO-CIALIST	NON SPONSORED	IZRIE BIN NOSH	13	CLEAR	Update Payment
3	Adam Bar (Ceset) ABC	NON SPONSORED	ENOH ADHAM BIN AHYOP	8	CLEAR	Update Payment
4	ARPUTIN CYCLING CLUB	NON SPONSORED	AZE ER HASAT	5	NOT CLEAR	Update Payment
5	BALOK CYCLING CLUB (BCC)	NON SPONSORED	MENDUH SA BIN HONAHMED	11	CLEAR	Update Payment
6	Sekolah Kebangsaan	NON SPONSORED	HAFIZ BIN ROZAKATI	7	CLEAR	Update Payment

Fig. 8 Jamboree Payment Status Screen

This online registration system is easy to use and user friendly. It helps to reduce a lot of problems when using the manual registration system. This system helps committee members to make a reliable decision on certain things such as the number of t-shirts that should be ordered according to the sizes and number of goodies to be prepared for participants. Another important fact about this online registration system is the system was built in-house by the committee members.

5. Conclusion and Recommendation

Bio-Diversity Online Registration gives many benefits compared to manual registration system. This system eliminates many problems when using manual registration system such as it reduces time for registration process and reduces human error such as typo error and missing information or forms. The system is easy to use and gives a lot of benefits for participants, committee members and also the public.

For future work, this system should be upgraded by adding many other features payment through internet banking and credit/debit card. Another feature that can be considered for future work is to include the short messaging system (SMS) features to update or send any information such as payment reminder, payment status updated or event countdown.

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