Online registration system for recreational cycling marathons: Lessons learned

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Abstract. Recreational cycling marathons are a kind of attractive sport event where a bunch of riders ride a different courses without competing between each other. In the last fifteen years, sport became popular for people of all ages. Therefore, many recreational cyclists has joint to such events in order to test their abilities, have a good time with friends, meet new people, and take care for their health and body. Collecting registrations of cyclists in the events was difficult to manage because of a large time complexity. In the past, each cyclist had to print the registration card that was uploaded on the organizer's webpage, fill it and send to over the classic post. Today, the problem is worldwide solved by using the online registration system. Participants from different countries can register themselves over the Internet. This paper presents the common pitfalls and learned lessons in the past four years, when we began developing such solutions for recreational cycling marathons.

Keywords. online registration, marathon, website, competition

1. Introduction

The popularity of mass sport events is increasing in the last decades. With the help of media and social networks, healthy lifestyle is spreading among our society. Therefore, it is important to practice recreational activities like running, cycling, jogging, gymnastics, martial arts, fishing and even hiking to live stress-free life. However, there are still many subgroups of these athletes. Roughly speaking, three groups can be imagined:

- people who practice sport for themselves and do not attend any mass sport events,
- people who attend mass sport events or any other recreational events just for fun and thus do not compete,
- people who attend mass sport events, are well prepared and compete to win.

On the other hand, the advent of modern information technologies revolutionized many things. The revolution of GPS sports watches plays important role for development of

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many sport applications. Using computers, tablets, phones or any other electronic devices everyone can analyze his/her completed activities and plan new trainings online. Modern technologies also allow organizers to organize a competition or recreational event in a more convenient way. Using the computer, organizers can advert their events, send email invitations, present courses in online maps, describe conditions of events and even create an online registration for athletes. Comparing with the past, when organizers had to print files and send them in a classical way, today methods help to save organizer's budget also by applying less employees by registration's counter than in the past. Anyway, there were problems like:

- Organizers needed diligent people, who worked well in collecting registrations.
- Approximately 60 percents of participants were registered on the day of event. Therefore, registration place was crowded and people were waiting long,
- Organizers worked hard before and during the event due to crowd.
- Registration tasks were time consuming and imprecise due to manually copying, archiving and digitalizing data.

To tackle this problem, we propose to create an online registration system. In this paper, we present how modern and effective registration desk should be looked and we list the most important lessons learned in past four years during developing the novel solution for online registration. An outline of computer architecture for solving the problem is presented, and some suggestions are applied for an audience that is interested in organizing an event with the help of digital computers.

The structure of this paper is as follows: Section 2 is devoted to description of performing the recreational cycling marathons, while Section 3 deals with registrations on such events. Section 4 propose our solution for online registration. Section 5 describes lessons that have been learned from the proposed online registration system during the experimental work. The last section concludes the paper with some tips for future work.

2. Recreational cycling marathons

Recreational cycling marathons are one of the most often attended cycling events. They offer recreational rides on closed roads. Usually, these events are not intended to athletes that would like to compete. Marathon courses are divided into few different classes according to their difficulty. The difficulty class may vary on different marathons.

In general, the cycling marathons are performed annually. There are three different marathon routes, starting from flat route of length about fifteen kilometers. Second route is about sixty kilometers long and consists of some hills suitable for beginner cyclists, while the third route with about hundred kilometers of length devoted also to advanced cyclists. The example of the longest course (total length of 103 kilometers) is illustrated in Fig. 1.

As mentioned above, riders cycle on closed roads. Closing roads presents security for athletes as well as for the organizer. Although security officers watch every corner on the route and stop vehicles when needed, traffic regulations need to be respected. Today, not only road marathons are applied, there are also MTB marathons, driven in forests and roadless areas and cyclo-crosses, which consist as a mixture of both mentioned. During a marathon, attendees can also refresh in refreshment zones. Those offer water,
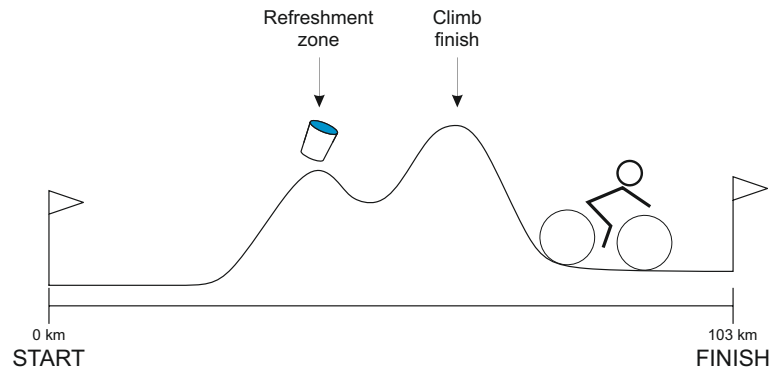
Figure 1. Marathon course.

sport's drinks, energy drinks, bars, chocolates ,etc. Marathons can also apply so called climbing provisional finish, when riders sprint to the summit of the climb to achieve a prize. Climbing finishes are often presented by competing marathons, which may also apply prize money for best cyclists.

2.1. Differences between professional race and recreational marathon

There are quite some differences between professional races and recreational marathons. Professional cyclists firstly outline the team tactics, which is the most suitable for all team members. During the race, they compete for their team and try to win as much as possible. Comparing to recreational cyclists and amateurs, who usually need to get a job aside to earn money, professionals are paid for riding a bike. Besides that, recreational cyclists must pay to attend in a marathon. They are usually all-men-in-one, while professional teams contain a lot of staff, like trainers, selectors, directors, car drivers, masseurs, maintenance men, cooks and of course, management.

Consequently, professional races are often broadcasted on the Internet. Cycling races are gaining popularity every year. One of the most famous races are Classics, Giro d'Italia, Le Tour de France, La Vuelta and World Championships. The most common reasons for increasing popularity are the media activity and attractions that cycling offers [4,6,5,2].

3. Registrations on recreational cycling marathons

Online registrations can be made up to one year before occasion. Attendees select a course in which they want to participate. Registration demands cyclist's personal information, preferred route, size of T-shirt, if applicable, and meal type. After successful registration, user's information are being stored to administrator database.

Registration is the mental preparation for every cyclist. While registering and watching race information, thoughts about sufficient training to successfully pass finish line without many efforts rise. Registration is always the first step for each attender of a marathon and serve as mental uplift to everyone. While greater marathons (with few thousands of cyclists) offer usually exclusively online registration, smaller

marathons (with less than thousand of registered cyclists) offer also local registration at the marathon's day, but fee usually grows a bit higher.

3.1. Registration tasks in the past

In the past, registration tasks were held exclusively at the event day. All participants came to the event a day before, lined in a queue and waited. That system could be only applied to small, local marathons, while even greater marathons could not afford so many registration counters and registering volunteers. As already mentioned, organizers were printing huge packs of applications and sending them over classical post. Sending abroad and waiting for the reply was not convenient. There were costs at both sides. Later another method was applied. Sending with classical post was switched with e-mail post.

Participants could register themselves with writing an e-mail with all necessary information. If any information were missing, the e-mail was rejected by organizer and participant had to write a new e-mail. The registration fee was settled by going to local bank, writing a money order for organizer and paying the deposit to bank counters.

Progress of the Internet technologies and efficient computer systems made the registration process simplified. Participants can today register worldwide on a web registration form, without any costs. Organizer keeps data safely stored locally, or in cloud. The invention of web banking system simplified also paying the registration fee. Participant can now pay their fee with credit card, in any world currency, without any percentages. After all, registrations can be made from couch.

4. Architecture of the proposed solution

In order to develop a new way for registrations, a new solution is described. An architecture of the proposed solution for online registration consists of:
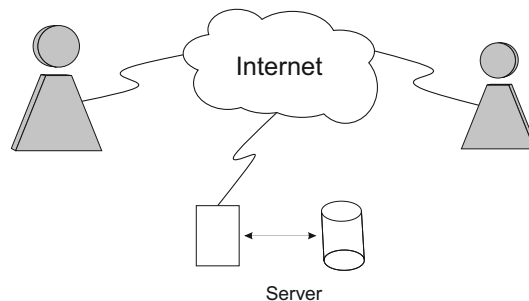
- web server,
- web site,
- web form and
- email confirmation.

The proposed architecture was set up as follows. At first, web server was created in order to enable users to communicate with an application for online registration for storing the registration data into database locally. After examination of different operating systems, NetBSD operating system was chosen in our experiments. The installation of the required server components was followed, i.e., Apache web server, MySQL database and PHP [1]. The proposed application server infrastructure is presented in Fig. 2.

When performing the application infrastructure, a development of a presentational web site and web forms was started. The successfully registration is announced to the user using by sending the email.

4.1. Design of an application for online registration

Web site is the most important part of registration, therefore most of the time should be spend as developing and polishing it. Participants wish it to be good-looking, user-friendly and simple. It should not request any special personal information. If there are

Figure 2. Application server infrastructure.

any special information applied, should be listed in a dialog box. Web form is integrated into the web site and presented along with other information regarding sport events.

Picture 3 presents an example of website for marathon registration. Readers indeed find the form very simple, not asking people for any specific information. In our case we store the following information (Alg 1) via PHP web forms.

Algorithm 1 Variables used in form

1: $name = $_POST["name"];
2: $surname = $_POST["surname"];
3: $birthdate = $_POST["birthdate"];
4: $street = $_POST["street"];
5: $place = $_POST["place"];
6: $post = $_POST["post"];
7: $zip = $_POST["zip"];
8: $club = $_POST["club"];
9: $sex = $_POST["sex"];
10: $email = $_POST["email"];

Figure 3. Online form

After registration, confirmation email should be sent, to remind user about successful registration. Moreover, a list of registered participants should be present. Confirmation email, in XML form, should be sent also to web administrator, to reduce the chance of information loss.

5. Lessons learned

Proposed solution was in usage during the 2006 to 2010. It covered different cycling marathons in the region Pomurje (Slovenia). Since started, we encountered some problems that can be summarized in the following lessons we have had learned:

- Create a promotion of your event at least six months prior event. Promotional material should be good-looking and all information (also interesting information: prizes, food, course...) must be visible. For example, an example of our leaflet is presented at the end of this paper.
- Send email invitations more than once to email addresses. Especially, you have to send invitations to people who participated in your previous events. You should attach a leaflet too. However, do not be too pushy.
- Cooperate with other local organizers of events. You should give them your database of emails (previous participants) and they should get you their data too.
- Online registration should be a little bit cheaper that conventional registration e.g. 20 percents cheaper. That will attract more competitors to register for your event before the marathon day.
- Do not ask people very personal and special information.
- Use free software and support it. You will spare a lot money instead of using any other commercial software.
- Backup registration data. Do you imagine what would happen if you lose data during registration process?
- Test your application very well. Everything has to work fine.
- If you expect competitors from different countries, you should consider multilingual support.
- You should also prepare a registration list and show registered competitors to your event.
- Have an evidence of previous participants of each competitors. For example, if someone come for a 5th or 10th time on your event, mention this competitor, say him a thank you for trust and give him a special prize.
- Save your data during the years. You should use it for data mining purposes [3] in the future.

These are the main lessons we learned in the past years when we successfully organized sport events. However, there might be also more problems which arise when organizer deals with more than 10000 participants.

6. Conclusion

In this article, an online registration system for monitoring the sport events was presented. In line with this, an architecture of the online registration system was presented.

Then, design of online application using the 3-layered application model was described. Many experiences were gained and many important lessons were learned during our real-world experimental works with the system in organizing the sport events. However, these were explained as guidelines for developers who will meet with the problem in the practice.

In the future, there are still many ways of improving the proposed registration system, like electronic payment, which may also speed up the work of small organizers of sport events with limited budget.

Acknowledgements

References

[1] Jesus Castagnetto. *Professional PHP programming*. Apress, 1999.

[2] Lupo Corrado, Antonio Tessitore, Laura Capranica, Samo Rauter, et al. Motivation for a dual-career: Italian and slovenian student-athletes. *Kinesiologia Slovenica*, 18(3):47–56, 2012.

[3] Iztok Jr. Fister, Dušan Fister, Iztok Fister, and Simon Fong. Data mining in sporting activities created by sports trackers. In *Computational and Business Intelligence (ISCBI), 2013 International Symposium on*, pages 88–91. IEEE, 2013.

[4] Samo Rauter and Mojca Doupona Topič. Perspectives of the sport-oriented public in slovenia on extreme sports. *Kineziologija*, 43(1):82–90, 2011.

[5] Samo Rauter and Mojca Doupona Topič. Runners as sport tourists: The experience and travel behaviours of ljubljana marathon participants. *Collegium antropologicum*, 38(3):909–915, 2014.

[6] Samo Rauter and Mojca Doupona Topič. Differences in travel behaviors of small and large cycling events participants. *APSTRACT: Applied Studies in Agribusiness and Commerce*, 7(1), 2013.

Vabilo na

13. kolesarski maraton
Občine Tišina,

ki bo v nedeljo,
24. maja 2009,
ob 10.00 uri
v Tropovcih

(pri prostorih KK Tropovci,
Kolesarska ulica 64).

Občina
TIŠINA

ljubljanska banka
Nova Ljubljanska banka d.d., Ljubljana

triglav

Freerider
KOLESARSKI CENTER

FRONTLAB

NAGRADE
Vsi udeleženci, ki se bodo prijavili in plačali startnino,
prejmejo spominsko medaljo, osvežilne napitke ob progi, na
cilju bo na voljo kolesarska malica, žrebanje nagrad, na-
grade za najštevilčnejšo ekipo, najstarejšega in najmlajšega
udeleženca in še presenečenja.

Vljudno vabljeni!

Kolesarski klub Tropovci

ŠTART in CILJ
Pred prostori KK Tropovci, Kolesarska ulica 64.

PRIJAVE
Na dan prireditve od 8.00 ure do 9.30 ure
na starno-ciljnem prostoru.
Predprijave (12,00 EUR) na: www.kktropovci.com.

ŠTARTNINA - 15,00 EUR
Za skupine (10 in več prijavljenih), imetnike Olimpijske kartice in
občane Občine Tišina - **12,00 EUR.**

POGOJI UDELEŽBE
- udeleženec maratona je vsak, ki se prijavi in plača štartnino,
- s plačilom startnine udeleženec potrdi, da se strinja s pogoji
razpisa,
- vsi udeleženci maratona so udeleženci v cestnem prometu in
vozijo po cestnoprometnih predpisih in na lastno odgovornost,
- organizator ne odgovarja za morebitno povzročeno škodo na
ljudeh in materialu,
- osebe do 14. leta starosti se lahko maratona udeležijo samo
v spremstvu staršev ali skrbnikov,
- priporočamo uporabo zaščitne čelade.

TRASE PROG
56 km: Tropovci - Gradišče - Murski Črnci - Tišina - Petanjci - Gederovci
- Cankova - Pertoča - Dolnji Slaveči - Grad - Bodonci - Zenkovci - Skakovci -
Gederovci - Vanča vas - Tišina - Tropovci

36 km: Tropovci - Gradišče - Murski Črnci - Tišina - Petanjci - Gederovci
- Cankova - Krašči - Domajnici - Cankova - Gederovci - Vanča vas - Tišina -
Tropovci

17 km: Tropovci - Gradišče - Murski Črnci - Tišina - Petanjci - Gederovci -
Vanča vas - Tišina - Tropovci

5 km: Tropovci - Gradišče - Murski Črno - Tropovci