

Modern Web-based Management System for Administration of Scientific Conferences

Abstract – This paper presents the web application named ConfEdit, which was created as a management system for the organization of scientific and academic conferences. The application was created using php Laravel framework and MySQL database and it is a tool that allows conference organizers to spend more time on the program and significantly less time administering. This application brings a number of improvements to nowadays applications used by the largest number of scientific-academic conferences. The application is multilingual and provides responsive design for different screen sizes.

Keywords – Scientific conference software, Paper review automation, Management system, Editor software.

I. INTRODUCTION

Over the past two decades, demand for web and cloud applications has risen dramatically [1]. With the rising of demands, web technologies have been developed and they are exceeding desktop applications by functionality, performance and appearance. The inconsistency of the web browser, the lack of appropriate tools for creating a user interface, code-writer and debugging are now past. Even classical desktop applications, such as *Microsoft Office*, have their own cloud versions now, and the Serbian-American start-up company "Mainframe2" [2] has enabled to run any application software from a web browser. Today, web applications are accessible in all areas of life, as they allow access to data over the Internet from anywhere and at any time.

At the same time, with the development of the market for mobile applications and generally mobile devices, there is a need for multi-platform (cross-platform) solutions, i.e. applications that will work equally well on computer, tablet, mobile phone or any other device, which led to the creation of the rich Internet application-Rich Internet Application [3]. Technologies are moving very fast, and the big milestone has made the appearance of mobile phones and the ability to access the desired content from the smaller screens. Responsive design has become very important because it provides an uninterrupted user experience regardless of the size of the screen of the device from which it is accessed. Many applications developed earlier are more difficult to use on newer devices precisely because of the lack of responsive design.

Today there is a small number of web applications which support scientific conference management [4]. A large number of conferences for paper submission and review use *Easy Chair*

[5] web application. This software is functionally very rich but it has not adequately improved the user interface comparing to similar modern web user interfaces.

In order to offer a solution that will enable to all participants in the conference a better user experience and easy use of the application from the mobile phone, the authors of this paper created the application as a conference management system.

The application was created using PHP language version 5.6.40 with Laravel framework [6][7] version 5.4 and MySQL database [8] and provides to its users modern user interface and easy using by mobile phone. PHP (Personal Home Page or PHP Hypertext Preprocessor) as a script running on a server and designed for use on the Web has become very popular in recent years. As an open source project, which means that developers are given free access to the source code, it can be used, modified, and still distributed, completely free of charge. PHP has many advantages: better performance, expandability, low cost, good support for object-oriented programming, portability, source code is available to everyone and embedded libraries to perform a large number of common Web application tasks. Because of all the above, PHP and MySQL are used to create this application.

II. USER ROLES AND PERMISSIONS

The application can be accessed via web browser at www.demo.confedit.net and application users are divided into the following roles:

- **Editor** - the conference editor with the highest level of privilege, has an insight into all the submitted papers, assigns reviewers, manages user accounts, performs application settings, creates accompanying documents for the conference. The account can only be created from the application.
- **Author** - participant at a conference who wants to publish the paper. The account can be handled by each author independently, and can be created by the editor from the application.
- **Reviewer** - person in charge of evaluating works. The account cannot be handled independently, but can only be created by the editor from the application.
- **Author and Reviewer** - united roles of Authors and Reviewers. Editor can also add the role of a Reviewer to the author or create an account with both privileges.
- **Printing manager** - person in charge of preparing the press release and only handles the papers that had got the status *ready for printing* after the acceptance.

After logging into the system, the user interface is adjusted to the privileges that a specific account has depending on the role. Below are detailed instructions given by user roles.

III. EDITOR SECTION

¹Slavimir Stošović is with College of Applied Technical Sciences in Niš, Aleksandra Medvedeva 20, Niš 18000, Serbia, E-mail: slavimir.stosovic@vtsnis.edu.rs.

²Dušan Stefanović is with College of Applied Technical Sciences in Niš, Aleksandra Medvedeva 20, Niš 18000, Serbia, E-mail: dusan.stefanovic@vtsnis.edu.rs

A. Management of the papers

The section *List of papers* lists all papers submitted to the conference divided by categories (topics of the conference). For each paper, the table shows paper title, authors' names, possibility to download last version of the paper, status, and quick add-on icon for detailed view of paper, Fig. 1.

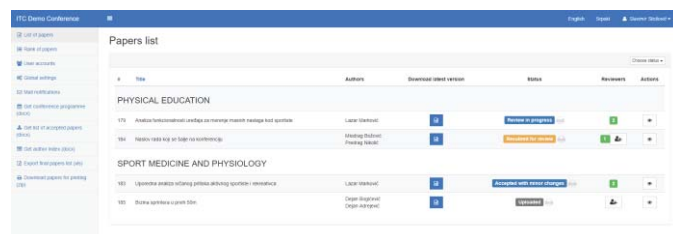


Fig. 1. Screen „Papers list“

By opening the option for a detailed overview of the paper, the Editor has all the necessary options for managing the current paper, as it is shown in Fig. 2.

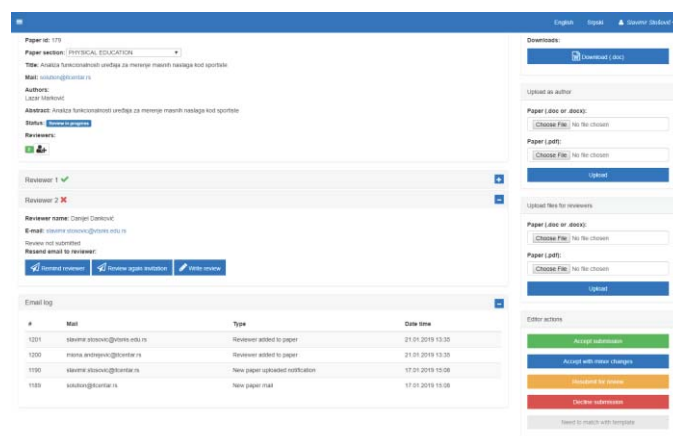


Fig. 2. Paper detailed view

In the *Paper section* Editor can change the category (section) of the work in the drop-down list. After changing the Category, Author is notified by e-mail about the change of category. In addition, the editor is available for a review. The editor has options to notify reviewer in different options:

- **Remind reviewer** - sending an e-mail reminder,
- **Review again invitation** - sending the reviewer an e-mail with a request to review the paper in the second and each subsequent review cycle,
- **Thank you Reviewer** - sending feedback to the reviewer for the completed review

In the section *Upload as author*, the editor can add a new version of the paper in .docx and .pdf format to the system, and in the section *Upload for reviewers*, the editor can add special versions of the paper in .docx and .pdf format (for example, with the author's name removed in order for the Reviewer to evaluate anonymous work).

In the section *Editor actions*, editor can make one of the following decisions:

- **Accepted as final** - paper is accepted as it is in the latest version
- **Accepted with minor changes** - paper is accepted, but it needs to be corrected in accordance to the recommendations, before it is finally accepted
- **Resubmit for review** - changes are required in accordance to recommendations, and then resubmitted for review
- **Reject** - Paper is rejected and cannot be resubmitted
- **Does not match the template** - if the paper submitted to the conference does not follow the instructions in the template, it can be returned to the author for editing. This status is active only in the first step, i.e. before assigning the paper to Reviewers.

B. Global Settings

The section for global system settings is for Editors to define timelines, work categories, and generic e-mail content, Fig. 3.

By defining the conference title and selecting the conference logo, each conference can be unified individually. Registration of new authors can be banned in a certain period, and the application can switch to the edit mode, whereby users receive a change mode message instead of the login screen. In the review form Editor can turn on or turn off the grading by selecting the appropriate option. If the rating regime is on, it is necessary to set the minimum and maximum grade as well as the step of changing the rating. In the Deadline section, the final date for the submission of papers for the conference is entered. After that date it is not possible to add paper through the system.

In the “Days for final version”, “Days for correction”, “Days for review” input fields, the number of days given to the author to complete the action is entered. Based on these values and the date of sending the e-mail to the author with certain requirements, the deadline is automatically calculated.

Creating text of generic e-mails is defined in a way that allows to the Editor combination of text and predefined values (values of variables) listed on the right. Adding a variable to a text is very simple; you need to place the cursor at the position where the variable is desired (for example, the access code) and click on the gray rectangle on the right side with the name of the desired variable (for example, the password).

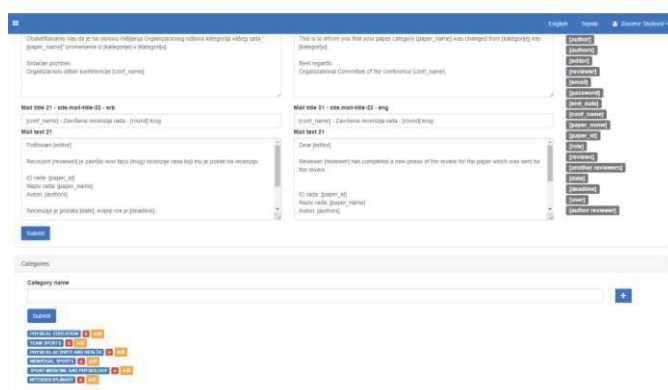


Fig. 3. Global settings screen

In the third part of Global Settings, there are options for adding / editing / deleting the conference paper categories. By entering

the category name and clicking the Submit button, a new category of paper will be added (conference area). Using the + option, multiple categories of papers can be added at the same time. The category of paper can be selected by the Author when registering for conference proceedings, but Editor can change it later.

C. Documents preparation

In order to optimize the time to prepare the necessary documentation, the Editor has the ability to create the following documents in the application:

Get a conference program - allows to automatically create a .docx file containing the names of the papers, the author's name and surname, divided by the category of paper.

Get a list of accepted papers - allows to automatically create a .docx file that lists the names of all accepted papers at the conference.

Get author index - allows to automatically create a .docx file that lists the authors' names of all accepted papers at the conference.

Export final paper list - allows to automatically create a .xls file listing the names of papers and authors' names of all papers in the conference that are in the final status and are ready to be printed in the proceedings.

Download papers for printing - enables automatic download of all papers that are in final status, past review and accepted for publication at the conference.

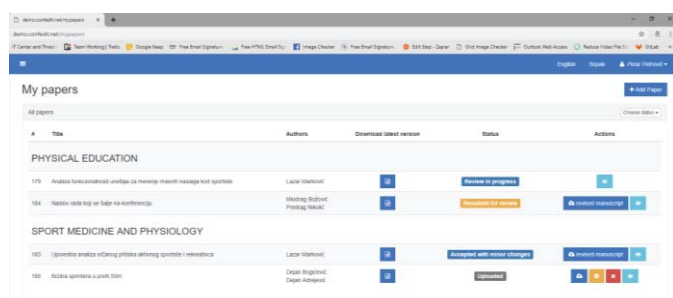
IV. FUNCTIONALITIES FOR AUTHORS

The author can log in to the application by visiting the address www.demo.confedit.net using the web browser. If the Author does not create an account, he can do this by visiting the *Sign up for Author account* link and filling in all required fields (marked with star) for creating the account.

The author is obliged to enter the Name, Last Name, Title and e-mail address. The system sends an e-mail with detailed login information at the specified e-mail address. After clicking on the *Register* button, the account is created and the user is automatically logged into the system.

If any user has forgotten the access code, he can open the link to reset the access code. After entering the email address to which the account is registered, it is necessary to click the *Send Password Reset Link* button.

After logging into the application, the Author is automatically located in the *My papers* section where he can administer his conference work, as shown in Fig. 4.



Title	Authors	Download latest version	Status	Actions
PHYSICAL EDUCATION				
179 Analiza funkcioniranja ušne školjke za merenje intenziteta zvuka	Lazar Marković	[Download]	Accepted for publication	[Download]
184 Navedite vaše tipove i sadržaj na konferenciji	Miroslav Stokić Predrag Nakić	[Download]	Downloaded for printing	[Download]
SPORT MEDICINE AND PHYSIOLOGY				
183 Upravljanje analitičkim informacijama u okviru sporta i rekreacije	Lazar Marković	[Download]	Accepted with minor changes	[Download]
185 Biološka sportova u prirodi	Dajana Bogdanović Dajana Alimpić	[Download]	Downloaded	[Download]

Fig. 4. Authors paper list

Each paper in the table lists the paper id, title, authors name, icons for downloading the latest version, the status of work and icons for certain activities whose availability depends on the current paper status.

By clicking on the icon for a detailed overview, user gets a screen with detailed information, reviews, status history, and paper history. By clicking the *Download template* link in the left-hand menu, the author can download the template for the preparation of the conference paper.

The Author can add new conference paper by clicking *Add* button, after which it is necessary to fill in the format shown in the following Fig. 5.

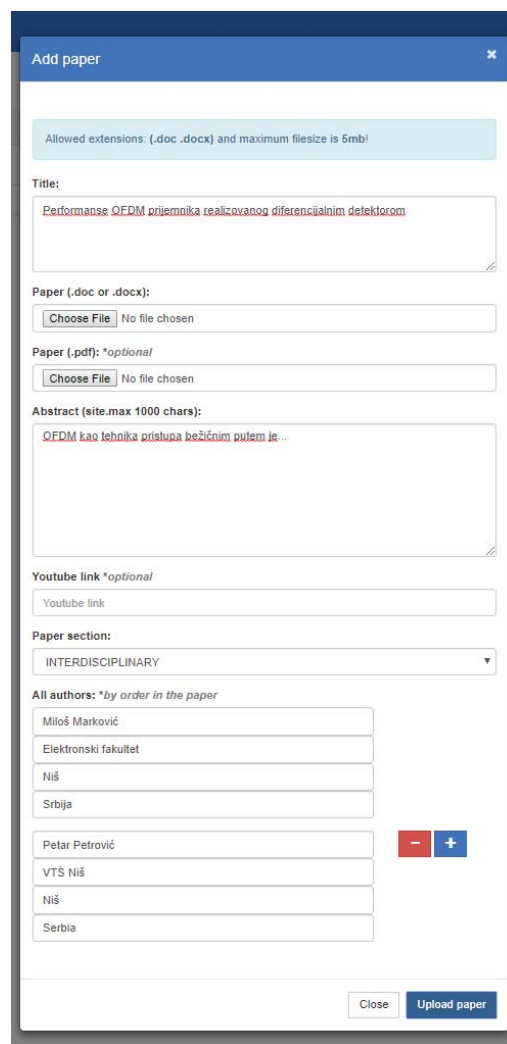


Fig. 5. Authors paper adding

It is also characteristic that the Author can send a link to download the poster and the link to the video presentation of the paper.

V. FUNCTIONALITIES FOR REVIEWERS

In the *Papers for Review* section, all papers assigned to the reviewer for grading by category are listed. For each paper, the

table shows the title of the paper, the download icon for the latest version, the status and the action icons. The display of the action icons depends on the current status of the paper and can be **Detailed view**, **submit review** (after assigning review paper by Editor) and **Resubmit review** (after evaluating the paper and before Editor sent the decision to the author).

By clicking on the detailed view icon, the reviewer gets an overview of detailed work information as well as a review of his previous review if he has already done so.

By clicking on the icon for reviewing a review **Submit review** or **Resubmit review**, a window will be opened with the form for evaluating the paper.

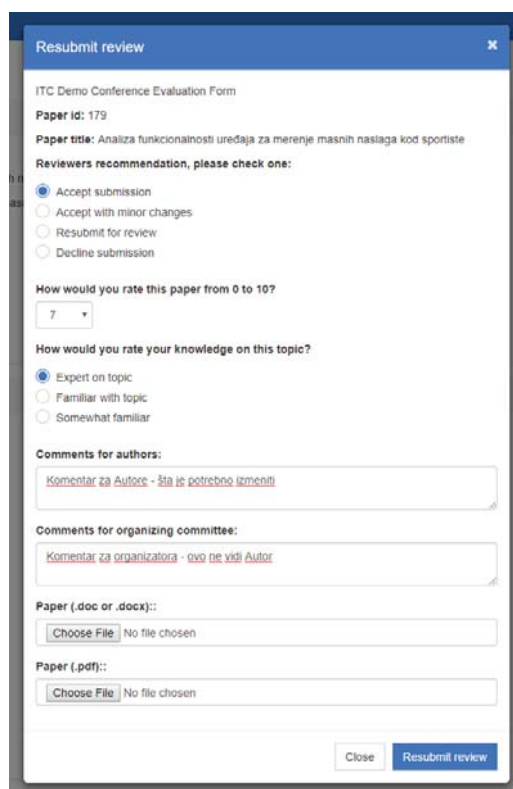


Fig. 6. Reviewers forms

In addition to the author's comments and the Organizing Committee, the Reviewer can evaluate the paper (if this option is included) and send the author an additional document in .docx and .pdf format as an explanation, as shown in the Fig. 6. The author's and the reviewer's account can be united so that the account obtains the common functionalities of the author's and reviewer's account. In doing so, the reviewer cannot review the paper where he is the author also.

VI. FUNCTIONALITIES FOR PRINTING MANAGER

In the *Papers for printing* section, all the papers that got the label *ready for printing* by category were shown in the table. The Printing manager's task is to take the papers that are accepted for the conference and prepare them for printing in the proceedings.

In the left menu the Printing manager has additional options: *Get a conference program*, *Get a list of accepted papers*, *Get a paper index*, *Export final paper list*, *Download papers for printing* for an easy way of preparing documentation.

CONCLUSION

Conference management system named ConfEdit and presented in this paper is a web-based application which supports scientific conference management with a lot of functionalities for Editors, Reviewer, Authors and Printing manager. Compared to other applications on the market this application provides modern user interface and responsive design for different screen sizes, sending conference call email to large number of recipients, ranking list based on different marks and few more things. Up to now, this application has supported three international conferences in Serbia, and authors plan to develop new functionalities in the future.

REFERENCES

- [1] M. Kosanović, S. Stošović, "Bogate internet aplikacije – pregled stanja 4 godine kasnije", Zbornik radova, Infotech, Jahorina, mart 2015, pp. 726 – 730, ISBN 978-99955-763-6-3
- [2] <https://fra.me/>, visited on May the 1st
- [3] S. Abolfazli, Z. Sanaci, A. Gani, F. Xia, L. T. Yang, "Rich Mobile Applications: Genesis, taxonomy, and open issues", Journal of Network and Computer Applications, Volume 40, April 2014, Pages 345-362, ISSN 1084-8045, <http://dx.doi.org/10.1016/j.jnca.2013>
- [4] Top 10 Abstract Management Systems for Academia: <https://medium.com/@eventindustrynews/top-10-abstract-management-systems-for-academia-98c16cf17a15>
- [5] <https://easychair.org/>, visited on May the 1st
- [6] N. Prokofyeva, V. Boltunova, "Analysis and Practical Application of PHP Frameworks in Development of Web Information Systems", Procedia Computer Science. 104. 2017, pp. 51-56. 10.1016/j.procs.2017.01.059.
- [7] SocialCompare PHP frameworks comparison: <http://socialcompare.com/en/comparison/php-frameworkscomparison>.
- [8] L. Welling, L. Thomson, "PHP i MySQL Razvoj aplikacija za Web", Pearson Education Inc., 2009.