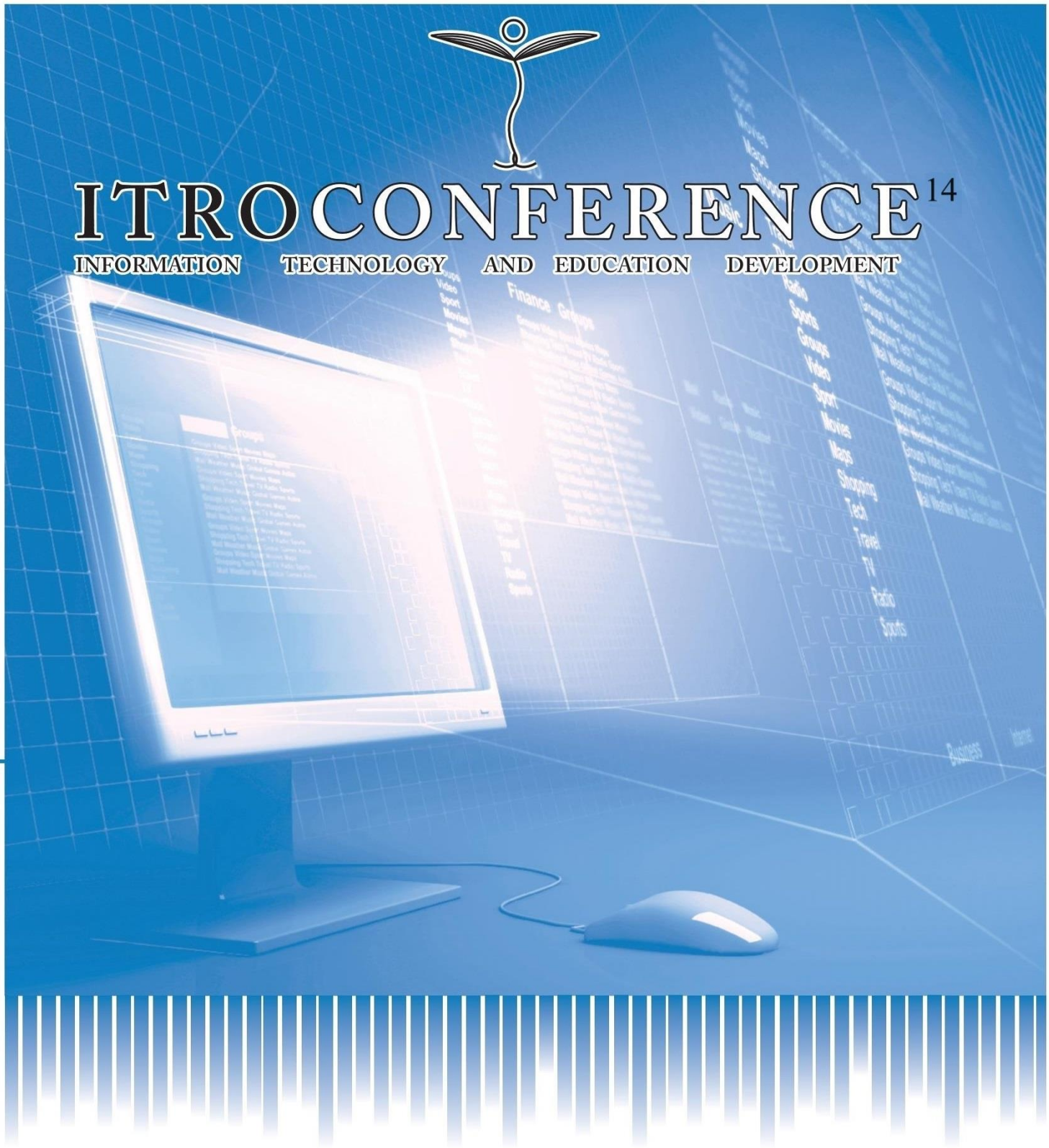
UNIVERSITY OF NOVI SAD
TECHNICAL FACULTY
"MIHAJLO PUPIN"
ZRENJANIN

ITROCONFERENCE 14
INFORMATION TECHNOLOGY AND EDUCATION DEVELOPMENT



ITROCONFERENCE 14
INFORMATION TECHNOLOGY AND EDUCATION DEVELOPMENT

PROCEEDINGS

ZRENJANIN, November 2023

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TECHNICAL FACULTY "MIHAJLO PUPIN"
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INTRODUCTION

International Conference on Information Technology and Education Development (ITRO) 2023, was held at the Technical Faculty "Mihajlo Pupin" for the fourteenth time. This year we have gathered our dear colleagues, scientists, researchers and students from several countries (Slovak Republic, Hungary, Macedonia, Bosnia and Herzegovina, India, Malaysia, USA and Serbia). They presented papers and promoted the results of research and scientific work in the field of information technology in education. The main course of the Conference was set up with some of the introductory lectures:

- "Challenges of the Technical Science Subject Teaching " held by Tünde Anna Kovács from Óbuda University, Bánki Donát Mechanical and Safety Engineering, Hungary;
- "VR Technologies in the Educational Process of Disabled People and in University Education On-line presentation" held by Csaba Szabó from Department of Computers and Informatics, Faculty of Electrical Engineering and Informatics, Technical University of Košice, Slovak Republic. Author and co-authors: Branislav Sobota, Štefan Korečko, Miriama Mattová, and Gabriel Stromp;
- "Analysis of Students' Academic Achievements in the Field of Mathematics and Computer Science" held by Gordana Jauševac from University of East Sarajevo/Faculty of Transport and Traffic Engineering, Doboj, Bosnia and Herzegovina. Author and co-authors: G. Jotanovic, G. Jausevac , D. Nedic, D. Mandic (from University of Belgrade/Faculty of Education), and D. Glusac (from University of Novi Sad/Technical faculty "Mihajlo Pupin", Zrenjanin);
- "Toward intelligent data analysis in higher education institutions" held by Nina Bijedić from Faculty of Information Technologies University Džemal Bijedić of Mostar, Mostar, Bosnia and Herzegovina. Author and co-authors: A. Joldić and D. Gašpar.

The other presented papers have cast light on various aspects of contemporary education in our country and abroad, such as: school without mobile phones, the phenomen of academic boredom, augmented reality learning environment, cloud technologies in education, etc. They addressed experiences, problems, questions, etc. in relation with information technologies and education development.

The conference was financially supported by the Provincial Secretariat for Higher Education and Scientific Research, Novi Sad. The Technical Faculty “Mihajlo Pupin” has provided the necessary technical support.

The ITRO Organizing Committee would like to thank to the authors of articles, reviewers and participants in the Conference who have contributed to its tradition and successful realization.

See you at the next ITRO Conference,

Chairman of the Organizing Committee
PhD Vesna Makitan

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SCIENTIFIC PAPERS

Migration and Redesign of an Existing Website to a New Server

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Abstract - In this paper, the migration of a website to a new server is presented, what that process included, how it is carried out and what are the initial and final goals. The process of redesigning is also presented. The emphasis is on migration. The introduction introduces the reader to the issue of web content and presents why WordPress is different from other challenges. We will also get to know what hosting is and what is a domain and what their roles are. In the first part, emphasis on "migration" is given, what represents, how that process takes place and what are the benefits and goals that can be obtained after the completion of that process. The second part has already presented the redesign of the site and what that process includes. The conclusion recalls the main features of WordPress web content and the possibilities of its application.

I. INTRODUCTION

A website is a collection of publicly available, interconnected web pages that share a single domain name. These are online pages that you can view using the Internet and web services on a computer or smartphone. Websites can be created and maintained by an individual, group, business, or organization to serve a variety of purposes. The website is also known simply as "the site".

Together, all publicly available websites make up the World Wide Web (Information system that enables access to documents and other web resources over the Internet).

To understand this better, here is an analogy! Just like a physical "site" on land where we build a house and live, we create a website on the Internet and our information lives on it. And, just like the addressee of our house, our page will also have a unique address called a “web-address". With the web address, Internet users can easily find our website and access information on it.

These pages, known as web pages, contain information or services from businesses or organizations. Information can be in different formats such as text, images, videos, audio and animation, and services can be of different types.

A. What is a Wordpress Website?

A WordPress (WP) site is any site that uses WordPress as its content management system (CMS). WP powers both the back part of the site (the interface where the user logs in to make changes or add new content) and the front part (the visible part of the site that visitors see when they open the site).

The possibilities are endless when it comes to customizing WP sites. WP themes and plugins can add new design options and additional functionality.

There are several types of websites that can be built in WP, some of them are:

- Blog – provides information on various topics.
- Website for entertainment – watching movies, videos, playing games, etc.
- E-commerce website – provides product sales over the Internet and billing through an online billing system.
- News portal – readers are updated with the latest news.
- Education website – of schools, universities or independent academic organizations that provide information on various available courses or offer online learning materials.
- Website for business - clients browse, contact, and ask for offers that interest them, schedule meetings, etc.
- And many others.

Today, the possibilities for making money with WordPress range from running online stores to building websites for clients to consulting with WP. And on the part of the user or buyer, regardless of the scope of a business, blog or learning site, having a website is super important nowadays. This is understood because, often, they do online research before planning to study, buy something, etc. This means that it has a great meaning for clients, i.e., users, and for owners.

B. *What is a Domain and Hosting*

Domain and hosting are the two most important things needed to create a website. The website works when these two things work together. Domain and hosting can look very similar to beginners. But there are many different terms. We need a domain or hosting to have our website online, open and working. And the website should be "public" so that it can be accessed.

C. *Difference between Domain and Hosting*

In simple terms, the domain name is the name of our website on the Internet. We need to register the name of our site with a domain registration company to get a unique web address. Imagine that we have a phone book, where we mark the name of each person, and then their phone number. We're probably not going to remember all the phone numbers, are we?

So, every website on the Internet has a web address that locates the position on the website. When we enter the web address of the website into our web browser, the browser moves down the network, finds the location of the desired page and presents the information for us.

This is where web hosting comes in. The storage location where files and content are stored on our website is called web hosting. Hosting services are also called web hosts and servers. Basically, these special computers are in a remote location. They consist of huge memories and very powerful processors. Some of the popular web hosting companies are Hostinger, GreenGeeks, Bluehost, GoDaddy etc.

D. *Domain Registration and Hosting with Different Companies*

A frequently asked question is, should I buy a domain name and hosting from the same company? As soon as we explain what domain and hosting are, it is important to clarify this one. It is not necessary to order together.

The domain name is controlled by the domain registrar and works perfectly with any web hosting company. But there is a huge advantage to ordering our domain name along with a hosting plan. Although they work together, domain versus hosting are different things. Many of the companies also offer domain registration and web hosting plans. By choosing a hosting package, the domain name registration is automatically prepared and connected to the selected hosting plan. This is perhaps the easiest way to have our site online on the Internet.

II. WHAT IS WEBSITE MIGRATION

"Migration" can sound like a dangerous phrase. Some people will say "site migration" which means the whole process of moving from one website to another. For others, "migration" is moving content from one platform (your old CMS) to a new platform (your new CMS). CMS (Content Management System) is a software application that enables users to create, edit, collaborate, publish, and store digital content.

In short, migration in our case is moving an existing website from one server to another, that is, from one hosting platform to another. Migration is one part of a much larger project. Planning, designing, developing, and moving content all fall under "migration".

The most common form of site migration is moving from one domain or hosting to another. However, the transition from HTTP to HTTPS (for secure communication over a computer network) and changing the URL structure (page address) are also types of migration.

In some cases, site migration is necessary for our business and of course there are many benefits, but we need to be careful. Many mistakes can occur, which will have a bad impact on the site, traffic will be reduced by half, or we will change the usability of our site so much that your income will drop off the cliff.

Those risks may sound daunting, but they can all be overcome by following tried and tested site migration strategies - like the ones we will cover below.

With adequate preparation, even a huge migration of pages can achieve the desired result. Careful planning and precise organization are the keys to pulling off an efficient migration that sets our site up for future success.

A website migration is any change to the website large enough to affect indexing and search engine visibility.

That change can be a visual refresh, an update to the internal structure, a change to a new CMS or an update to the software or a change to the platform. Many platforms work on a system for software versions, so companies that use those tools may need to migrate every few years while new versions are published, which is the basis for that type. Site migrations fall into these main categories and may include multiple changes from this list:

- Change to content
- Structural changes
- Change to design
- Software upgrade
- Changing the platform

During the initial phase of planning the migration to the site, it is necessary to think about the elements of the huge picture, how the content management system (CMS), visual design and structure of the pages need to be changed. It will be necessary to take time before starting the whole procedure to review the design, structure, and tools and to decide what the site migration plan will cover.

- Setting expectations and goals

Any significant change to the entire site causes a short-term drop in traffic and should be prepared for that. Our goal should be to minimize the amount and for how long traffic on the site decreases. If our migration is done well, it will result in long-term traffic growth as errors are detected, corrected, and optimized.

Establishing a goal will not even help to direct our migration plan in the right direction. A well-organized website migration should have these three goals as its focus:

1. Preserving and optimizing for SEO and links

The goal of website migrations is to make necessary changes or improvements while maintaining search engine optimization (SEO). Also, we want to make sure that we keep the links active so that users can continue to find our site.

2. Migrating to the entire content

You must be sure that we won't lose any content during the migration to our site - no matter if it's images, text or the entire page.

3. Improving the design, performance, or functions of the website

If we focus our energy on the structure and content of our site, the migration is a good opportunity to adjust and improvements. And we evaluate our options and make decisions for visible changes - such as updating the visual design, improving the performance, etc.

The purpose of our migration of our already existing site from one host to another is to improve performance, in accordance with the most modern standards and the reason is more cooperation and familiarity with the GreenGeeks platform.

III. CHOOSING A NEW HOSTING SERVER

People constantly change their so-called web hosts, for various reasons. Some are simply dissatisfied with the speed or quality of content distribution systems. Others find the same quality of service at a lower price or with favorable payment terms.

If you find yourself in this situation that we already found ourselves in, then it is a good time to look for a better web hosting company. However, transferring our website can seem like a complicated task. But with a good analysis, explanation of the terminology, consideration of the issues and procedures, with step-by-step instructions, we can confidently proceed towards the realization of our set goal.

We spend a lot of time researching web hosts before choosing a new service. We read a series of reviews on the Internet and feedback from clients, we saw some of the deals offered by other hosting providers, their pricing systems, server configurations, etc. We aim to choose something suitable for our site.

A big decision should be made after finding a suitable new provider, we should consider that, at some point in the future, we may decide to switch from that hosting service as well. For this reason, it

is recommended that we register our domain with a third party, because this way, whenever we change web hosts, our domain will not be affected. There are companies in our country that offer web hosting, but foreign companies are more numerous. In our case, the choice for hosting went to a foreign company with which someone from our environment has been working for a long time and shared positive and quality experiences.

In our case we are talking about an already existing website, which was previously also hosted by the foreign company Namecheap. But because the site was previously maintained by another registrant it was not only necessary to change the current registrant to another, but also to change the web hosting provider, which in this case would be GreenGeeks.

IV. MIGRATION PROCESS

At the beginning, an additional domain (subdomain) was added, which the system stores as part of our main domain name. This was done with the aim of returning the same name to the domain as it was before, that is, to take away the current temporary name.

Installing WordPress is not difficult; however, it will take some time. We have hosting from GreenGeeks, where installing WordPress is very easy and takes a few seconds.

Access to the back end of the site was taken over by the previous registrant. With successful access to the so-called background part of the site, we can see everything that is available there. The site was created with the help of Avada themes and several plugins. For direct announcement and editing with the help of WordPress, it is only necessary to add /wp-admin to the URL of the site, where with the username and password we directly access the back end of the site.

A zip file with a licensed migration plugin has been added to the WordPress dashboard using the Add New option in the Plugins section. For more reliable and trouble-free migration, we used a special licensed plugin (WP Migrate), because with manual switching the procedure is longer and mistakes are possible. A plus reason for that decision was that manual switching requires importing the database and files through the terminal.

After add-on installation, the next step is to select everything that needs to be moved starting from the database. First, the connection information for the site from which the files and database should be downloaded so that they can be migrated is completed. Whether moving the site to a new server or from one platform to another, the process is the same. The only thing that is often mentioned is that it should be noted that there may be a maximum file size allowed for uploading, which is not the case with us.

After providing the necessary information, the migration is started with the transfer to the database (1), mobile attachments (2), themes (3), plugins (4), all other files (5). With the last transfer of all files, the site was transferred successfully.

Previously, the domain of the site was from the Macedonian platform MARNET, from which, when we sent a request to change the domain data, we received an EPP code with which the transfer of the domain could then be performed. When we tried to transfer the domain to another platform, only the EPP code was enough, which made the transfer successful.

The last and most important step in the entire migration procedure was the email follow-up to Support on the new server to change the name of the primary domain to the original domain.

Along with that, the domain was pointed to the hosting platform, that means connecting the domain to the hosting to make the site work. Finally, an SSL certificate (for a secure connection between server and client) was installed on the server which ensures that the domain name in the certificate matches the domain name of the site being visited. With that, the site is now https.

V. SITE REDESIGN

Redesigning a website generally implies a huge renovation on the pages focused on optimizing the content and structure to improve the user experience.

The theme with which our site got its overall appearance is Avada Builder. Avada has intuitive visual front-end design and editing tools to quickly create beautiful websites. It has a highly advanced grid with the option for easy customization without changing the code, graphics with ultra-high resolution, it has an automatic update on the theme directly through the administrative interface on WordPress and many others. The best part is that you can design anything without adding a single line of code.

In addition to the background part, there is an Avada Live Editor option, which was actually created to complement the default interface for building, and so the site, in addition to being able to be edited in the background in the Dashboard (back-end), can also be edited directly through Avada Live when your change is immediately visible before it is saved as a change (front-end).

VI. CONCLUSION

A website is compared to a book, where each page corresponds to a website. The website presents a kind of collage consisting of various contents: texts, images, sounds, animations.

The emphasis is placed on the site migration, which would safely lead to the conclusion that with adequate preparation, even a huge migration of the pages can achieve the desired result. Careful planning and precise organization are the keys to pulling off an efficient migration. In addition to the accuracy of the migration, good website design is also essential in today's web development.

All of this is very important for successful work, and all of that depends the most on the ideas and sensibility of the author.

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