

**Marija Šegan, Miloš Milovanović, Zoran Ognjanović**

Mathematical Institute  
of the Serbian Academy of Sciences and Arts  
Serbia

**Sanja Rajić**

School for Mechanical and Electrical Engineering “Goša”  
Smederevska Palanka, Serbia

**Milica Lajbenšperger**

National Employment Service  
Serbia

**Žarko Mijajlović**

University of Belgrade  
Faculty of Mathematics  
Serbia

## DIGITAL CATALOGUE OF CULTURAL MONUMENTS IN SERBIA 2012 – 2013: OVERVIEW AND HIGHLIGHTS

**Abstract:** The website *Cultural Monuments in Serbia* presents a digital catalogue which contains documentation on cultural monuments and sites of the Republic of Serbia. It was created with the goal to preserve and present a valuable part of the national heritage, which has not been well-preserved in digital form. The paper shows how the results of the examination of users’ expectations (high school students and teachers) were used for technical improvement of the digital catalogue. It analyzes, through the latest results in the development of the digital catalogue of *Cultural Monuments in Serbia* (2012 – 2013), the significant role of the 1) cultural and research institutions, 2) “fund-help”, as well as 3) users in digitization of the humanity’s shared heritage.

**Keywords:** cultural heritage digitization, digital repositories, user experience

### 1. Introduction and related work

The website *Cultural Monuments in Serbia*<sup>1</sup> presents a digital catalogue – collection of immovable cultural heritage of exceptional and great importance, such as monasteries, archaeological sites, fortresses, etc. It was created in 2004 by a group of national researchers and institutions<sup>2</sup>. Following the development of cultural heritage digitization process, some of the goals of the digital catalogue have been changed throughout the years. However, the three main goals can be still mentioned: to preserve, to present and to popularize the significance of national heritage.

The digital catalogue is currently administered by the Mathematical Institute of the Serbian Academy of Sciences and Arts (MI SASA). The catalogue has documentation on 1339 cultural monuments in Serbia. It is mostly based on data which were collected over the last decade during fieldwork. The digital data, such as digital photos, maps, plans, etc., are accompanied by appropriate text description and metadata. The greater part of the description

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<sup>1</sup> Cultural Monuments in Serbia. Available at: <http://spomenickulture.mi.sanu.ac.rs/>

<sup>2</sup> More about the creation of the digital catalogue of *Cultural Monuments in Serbia* see: <http://spomenickulture.mi.sanu.ac.rs/about.php> (25.11.2013).

is in national language – Serbian, but the descriptions of 10% of all records are translated into English.

The development of the digital catalogue has always been supported by national and foreign funds, and depended on several cultural heritage digitization projects of MI SASA. On the one hand the aim of these projects was to increase the digital content, and on the other to improve the technical performance of the digital catalogue. For example, the project supported by the United Nations Educational, Scientific and Cultural Organization (UNESCO) resulted in implementation of first virtual presentation of one of the cultural monuments – Kalenić Monastery<sup>3</sup>. The project of digitization of cultural heritage of the Toplica District, supported by the Ministry of Education and Science of Serbia created the collection not only of the cultural monuments of great importance, but also of less known and forgotten heritage<sup>4</sup>. The ongoing project, the project of digitization of the monuments and sites of the Danube District, supported by the Center for the Promotion of Science included the high school students and teachers, through the examination of their expectations, in the process of the digital catalogue improvement<sup>5</sup>.

In this paper we will focus on the results of the last project, which resulted in the improvement of the digital catalogue of *Cultural Monuments in Serbia* according to the expectations of project participants. The project itself presents a part of an initiative of creators (stakeholders and aggregators) of the digital catalogue to address the users properly. The digital catalogue of *Cultural Monuments in Serbia*, as well as the digital repositories in general are, among other things, a user service. Different groups of users may help in the development of this service.

## 2. Concept of user experience and *Cultural Monuments in Serbia*

In 2012 – 2013 more than one hundred teachers and students of two high schools of the Danube District in Serbia – School for Mechanical and Electrical Engineering “Goša” in Smederevska Palanka and Gymnasium of Velika Plana in Velika Plana – were introduced to the basic principles of digitization of cultural heritage, as well as trained to use the new knowledge in the regular school curricula. One of the project activities was examination of teachers’ and students’ (users) experience with the digital catalogue of *Cultural Monuments in Serbia*.

The concept of user experience is often encountered in (social) marketing. It presents a need to describe the reactions and expectations of users of any specific product or service [6]. The concept points out that a product/service has no practical value if it has no users. One can say that the aim of the user experience studies is to satisfy users’ needs: the greater the satisfaction of a user with a product/service, the greater is the use of the product/service. In the long-run, however, the goal is to create a product/service that improves the creativity and communication, as well as collaborations among the people [5].

We used the principles of user experience to answer, among others, the following question: what is the practical value of the digital catalogue of *Cultural Monuments in Serbia*, especially in high school education? The initial assumption was, based on Hassenzahl’s model, that every website has two groups of users: the creators (the group of users involved in

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<sup>3</sup> Cultural Monuments in Serbia. Kalenić Monastery. Available at:

<http://spomenikikulture.mi.sanu.ac.rs/projects.php?project=unesco>

<sup>4</sup> Cultural Monuments in Serbia. Toplica District. Available at:

<http://spomenikikulture.mi.sanu.ac.rs/projects.php?project=toplica#Prez>

<sup>5</sup> Cultural Monuments in Serbia. Danube District. Available at:

<http://spomenikikulture.mi.sanu.ac.rs/projects.php?project=podunavski#Prez>

the creation of the website) and the end users [4]. In our case the creators were the creators/stakeholders of the digital catalogue of *Cultural Monuments in Serbia*, and the end users were teachers and students of the two high schools in the Danube District. To examine the compatibility between the goals of the creators on the one side, and end users' (teachers' and students') expectations on the other, or rather, to what extent have their expectations been met, the techniques of the in-depth interviews, as a qualitative method, and the general survey, as a quantitative method, were combined. The results of the examination were presented in a user study, which has shown that the comments and suggestions of the specific group of end users, such as teachers and students "can help the creators make digital contents and repositories more interesting, attractive and interactive, which gives one more dimension to the practical value of digitized heritage in general" [9].

In this paper, we will not dwell on a detailed analysis of the results obtained through the examination of the user experience. We will, however, present a few important moments relevant to the issue of improving not only of the digital catalogue of *Cultural Monuments in Serbia*, but also of the digital repositories in general.

### 3. Improvement of the *Cultural Monuments in Serbia*

The examination of the user experience pointed out that the main problems of the digital catalogue of *Cultural Monuments in Serbia* are related to: 1) visibility, 2) structure and design, as well as 3) navigation and orientation through the content. In this section we will analyze the mentioned problems and offer a possible solution.

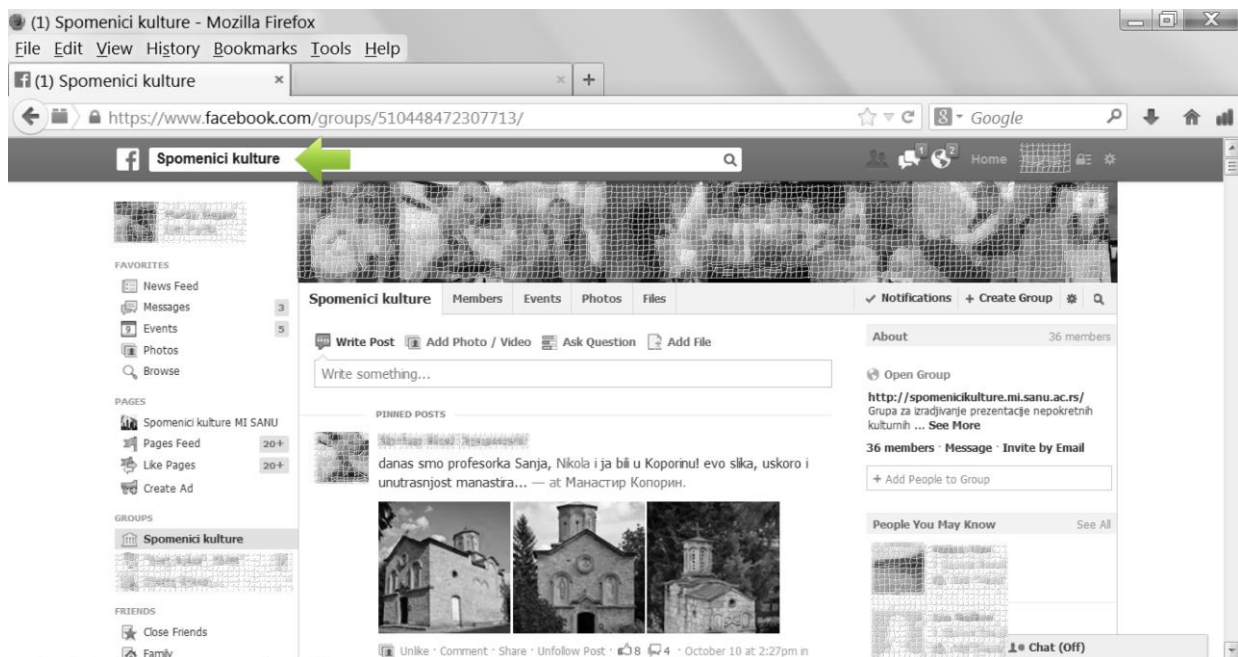


Figure 1: The Facebook web page of the *Cultural Monuments in Serbia* created by the students-participants in the project activities

The survey results showed that the visibility of the national digital repositories of the cultural heritage in Serbia, including the digital catalogue of *Cultural Monuments in Serbia*, was not so good. 30.7% of the survey participants have never heard about the existence of the cultural heritage digital collections. The same survey, on the other hand, offered the way to increase

the visibility through the social networking services. It underlined the fact that most of the participants use smart phones to access the Internet, especially Facebook. Facebook was valued as a user friendly environment to share and follow the issues of one's interests. Following the survey analyses, the Facebook web page of the *Cultural Monuments in Serbia* was created and linked to the official website. It was created by the students, participants in the project, as a place to share their thoughts and digital material regarding the project activities (Figure 1). The actual benefit of this was not only the increase of visibility and access to the official website (by 5% more than before), but also the fact that one of the social networking services was used as a way for crowdsourcing without "violating" the official website. The data (comments, photos, maps, etc.), freely shared by the students in a familiar environment (such as Facebook), present the specific (although unchecked) information on local heritage, often unknown to the experts.

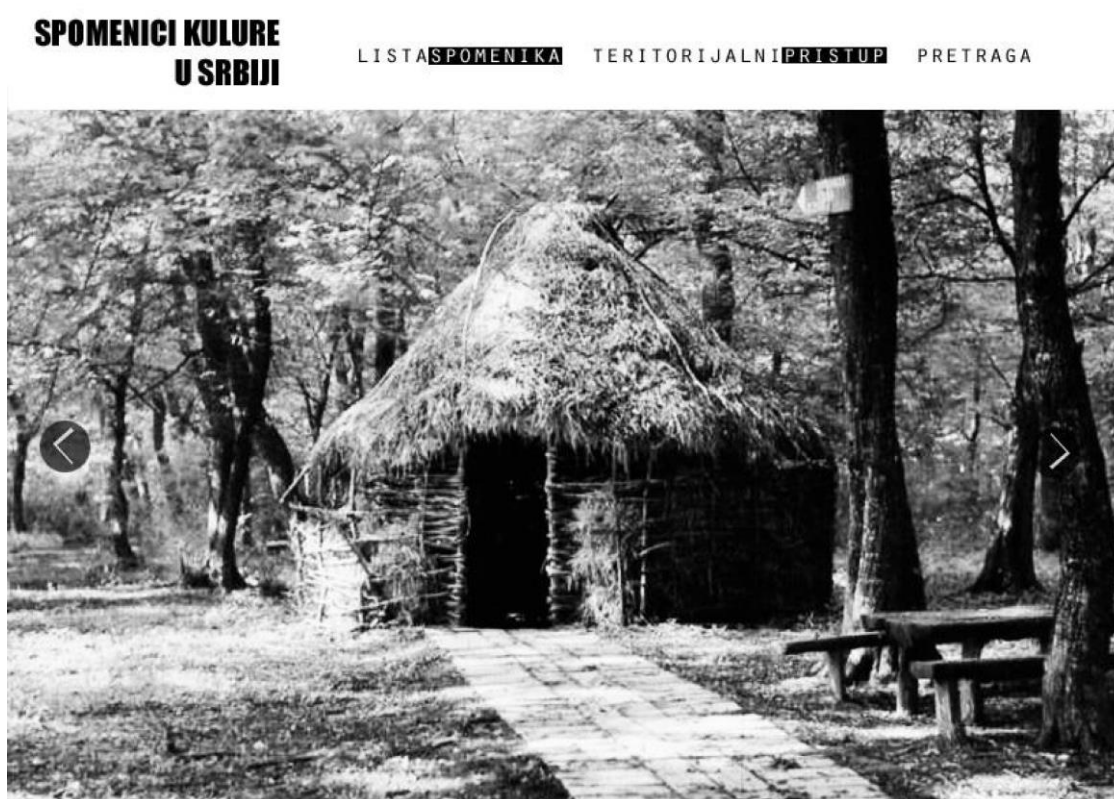


Figure 2: Design proposal for the official website of *Cultural Monuments in Serbia* made by a high school student

The participants of the survey evaluating the content and technical performances of the digital catalogue of *Cultural Monuments in Serbia*, rated, among others, the structure and graphical design of the website. Survey participants older than 40 (mainly teachers) expressed satisfaction with the simple design and hierarchical organization of the website. Survey participants younger than 40 (mainly students) suggested weblike organizational structure, allowing them to follow their interests. One of the suggestions was to change the homepage of the website in order to interest visitors in further exploration of the content. This observation was also confirmed by Google Analytics results, which showed that 68.19% of users left the website, after visiting the home page. The evaluation motivated the authors of the paper to

invite the students to offer their own ideas for graphical design of a cultural heritage website. The most common suggestions were related to adding the appropriate multimedia players and formats in order to increase the interactivity of the website (Figure 2). These insights into the expectations of certain categories of end users will be used as possible scenarios for the improvement of the digital catalogue in 2014.

One of the requests of the survey participants was to improve the navigation and orientation through the history of cultural heritage. To answer this request, there were two options: to implement the context based categorization of cultural heritage or to develop a graphic timeline. Most experts suggest the context based categorization [1]. Our survey, however, had shown that the end users (teachers and students) prefer and are accustomed to use timelines and periodization. Despite all the weaknesses of the history-based timelines and the fact that “periodization in particular has encountered many discontents” [7], we have created the digital and interactive timeline to stimulate visual and kinesthetic understanding of the history of cultural heritage. Within the timeline we have implemented the generally known periodization given by the Serbian history and art textbooks. The periodization in Serbian history and art textbooks is based on the division of the past events into prehistory and history, division of the prehistory into the stone, the bronze and the iron age [11] and division of the history into ancient, medieval and modern time [2]. The mentioned periodization was used, and to each period the automatic counter was assigned. The counter counts how many cultural monuments within the digital catalogue belong to a particular period (Figure 3). The first evaluation of the timeline by the end users has shown that they have found the concept of the timeline useful, but also that it needs a better graphic design [9].



CULTURAL MONUMENTS IN SERBIA			
TIMELINE			
P R E H I S T O R Y	The Stone age	Paleolithic (5)	2.6 million BC – 10000 BC
		Mesolithic (2)	10000 BC – 8000/7000 BC
		Neolithic (12)	8000/7000 BC – 3500 BC
	The Metal age	Eneolithic / The Copper age (4)	3500 BC – 2200 BC
		The Bronze age (3)	2200 BC – 1100 BC
		The Iron age (14)	1100 BC – 150 AD
A N C I E N T T I M E	Ancient Time	Pre-Romans time (11)	300 BC – 100 AD
		Romans time (65)	100 AD - 700 AD
H I S T O R Y	Medieval time	Before the Nemanjić Dynasty (27)	700 - 1167
		From the Stefan Nemanja to the King Milutin (30)	1167 - 1267
		From the King Milutin to the Fall of the Serbian Empire (83)	1267 - 1371

Figure 3: The counter of the Timeline of *Cultural Monuments in Serbia* shows that the digital catalogue currently has 14 monuments from the period of iron age

The digital catalogue of the *Cultural Monuments in Serbia*, among the above mentioned problems, also deals with some other issues, which will be analyzed in the period to come.

#### 4. Conclusion and future work

The digital catalogue of *Cultural Monuments in Serbia* was from the beginning the “product” of a specially organized consortium of institutions. Its development depended on the 1) stakeholders and 2) national and international funds. All the decisions regarding the content and technical performances of the catalogue were made by the experts. The catalogue had all the elements (knowledge, personnel, equipment, etc.) to become the digital repository of national importance. And then there-is-no-visitors-fact came out: more than 60% of visitors left the homepage after only a few seconds, and more than 30% of young people did not know about the existence not only of the digital catalogue of “*Cultural Monuments in Serbia*, or of other digital repositories of cultural heritage in Serbia. That was the turning point for the host of the digital catalogue – Mathematical Institute of SASA – to change the strategy. In the further development of the digital catalogue, next to stakeholders and national and international funds, the end users were included.

The project of digitization of the monuments and sites of Danube District and the direct involvement of high school teachers and students in the digitization process was the part of strategy for end user involvement in the development of the digital catalogue of *Cultural Monuments in Serbia*. Teachers and students (end users) were welcome to share their expectations and information regarding the official digital catalogue. Thus, the creators and end users have participated in the evaluation of the digital catalogue performances, and several key ideas were set aside as very important for further development of the catalogue: 1) increase the visibility via social networking services, 2) increase the visibility via implementation of apps for smart phones (smart phones are not expensive, they are widely used, and almost everyone has one), and 3) increase the use of a repository by end users via creation of web structure, design and navigation that are compatible with the end users’ expectations.

In the period to come the idea is to create a digital environment, which will enable communication between the creators and end users. Our belief is that the direct involvement of end users in the process of developing of digital catalogue of *Cultural Monuments in Serbia* can help improve the existing principles and technologies in the field of cultural heritage digitization.

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[msegan@mi.sanu.ac.rs](mailto:msegan@mi.sanu.ac.rs)

[milosm@mi.sanu.ac.rs](mailto:milosm@mi.sanu.ac.rs)

[rsanja73@gmail.com](mailto:rsanja73@gmail.com)

[stanojko@sezampro.rs](mailto:stanojko@sezampro.rs)

[zarkom@matf.bg.ac.rs](mailto:zarkom@matf.bg.ac.rs)

[zorano@mi.sanu.ac.rs](mailto:zorano@mi.sanu.ac.rs)