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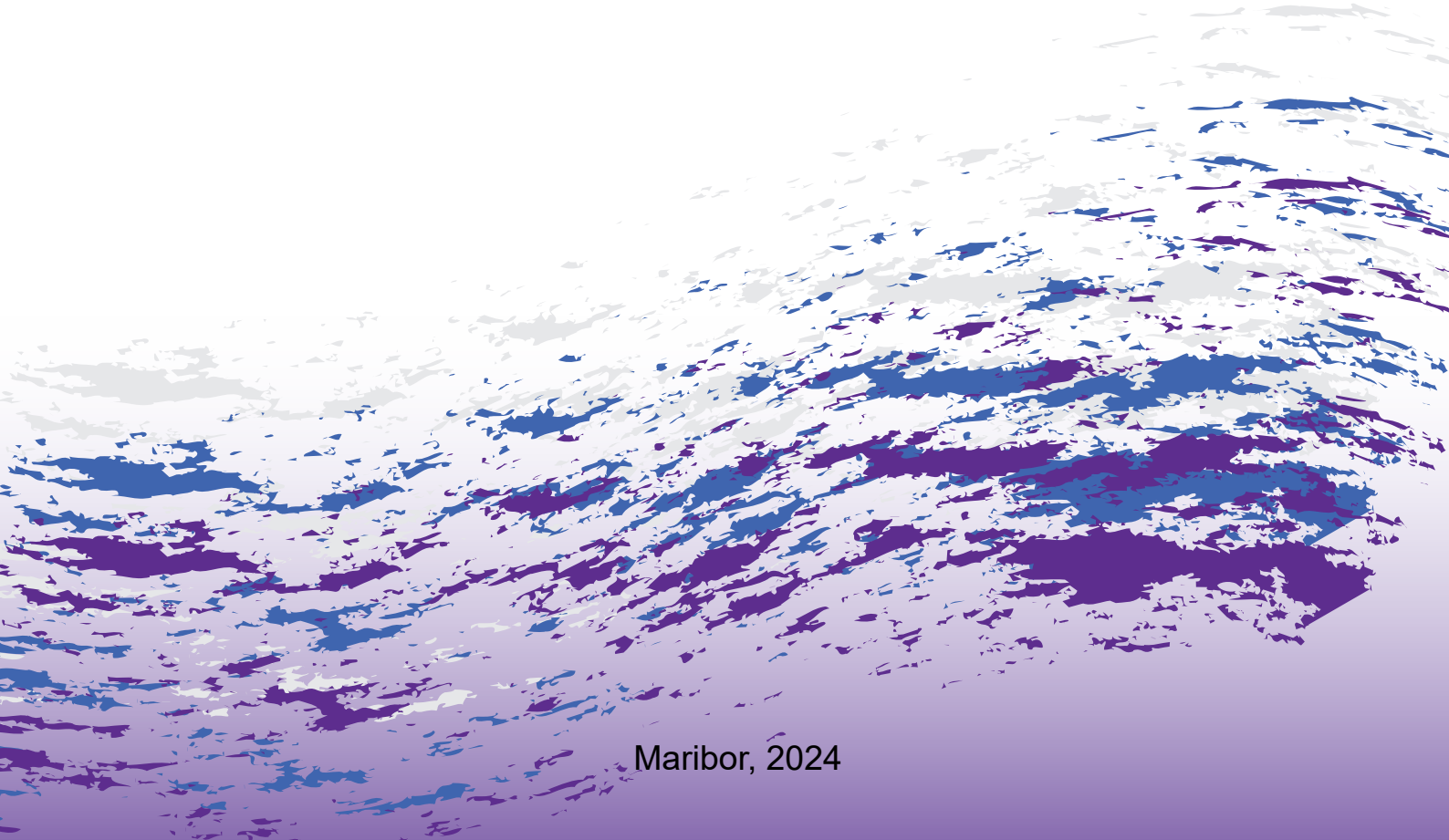

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OPEN SOURCE SOLUTIONS IN ARCHIVAL INSTITUTIONS

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Abstract:

Open-source solutions offer a cost-effective alternative for archival institutions facing budget constraints. The absence of licensing fees and the ability to modify and customize the software without vendor lock-in make open source particularly appealing. This financial flexibility allows institutions to allocate resources to other critical aspects of preservation and access.

In the article the author presents various advantages and disadvantages of using open-source software.

Key words:

open source, software, digital assets, archive, preservation

Izvleček:

Odprtokodne rešitve v arhivskih ustanovah

Odprtokodne rešitve ponujajo arhivskim ustanovam učinkovito stroškovno alternativo, kadar se soočajo z omejenim proračunom. Ker ne zahtevajo licenčnih pristojbin, nudijo možnost spreminjanja in prilagajanja programske opreme brez obveznosti do proizvajalca, so lahko odprtokodne rešitve še posebej privlačne. Njihova finančna ugodnost omogoča ustanovam, da usmerijo vire v druge ključne vidike hrambe in dostopa do arhivskega gradiva.

Ključne besede:

odprtokodni programi, digitalni viri, arhiv, hramba

In today's digital age, the use of IT tools in state institutions is becoming increasingly important. While we traditionally use commercial software, the value and advantages of using open-source software are increasingly recognized. There are many proven advantages and benefits of free software (FLOSS), such as: better security and reliability, reducing dependence on suppliers, controlling the handling of sensitive data, etc. Seeing this, the EU is trying to encourage the use of FLOSS in its administration, which has become very popular in the public sector of EU countries in the last fifteen years.

Advantages of using open-source programs:

1. Finances
2. Transparency and control
3. Independence from suppliers
4. Adaptability and customization
5. Access to source code

1. Open-source software is often available without license fees or at significantly lower prices than commercial alternatives. This enables saving taxpayers' money and better allocation of resources.

2. One of the key advantages of open-source software is transparency. The codes are open for public review and verification, which creates confidence in the security and integrity of the software.

3. By using open-source software, government institutions reduce their dependence on individual suppliers.

4. Open-source software enables adaptation to the specific needs of state institutions.

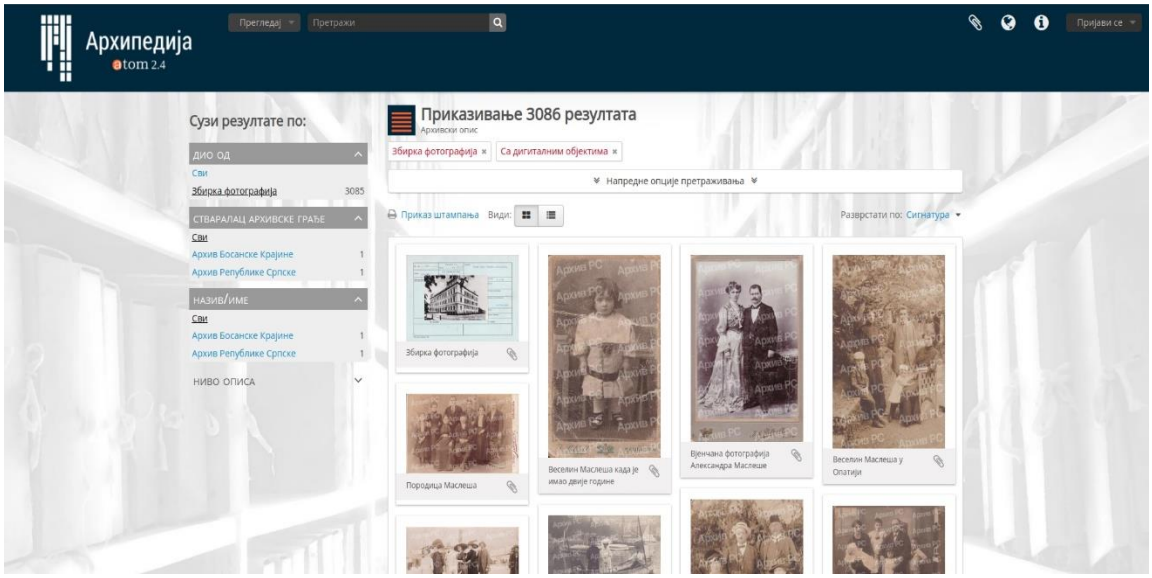
5. Availability of source code for free software and the ability to modify the same provides significantly greater flexibility for adapting software capabilities and features to specific needs no users.

The most significant disadvantages are:

1. FLOSS requires professional staff.
2. It is often not as user-friendly as commercial versions.
3. Less user support compared to proprietary software.
4. Potential vulnerability to attacks by malicious users.
5. Greater need for training.
6. Lack of interoperability with commercial products in the only cases.

One example of an open source software widely used in archival institutions is Acess to memory(ATOM).

Picture 1: Example of using ATOM open soource software in the Archives of the Republic of Srpska:



Archipedia (Arhipedija) is an AtoM 2.4 based, user friendly interface for archival description, operated by the Archives of the Republic of Srpska. Started in December 2017, this project is a constant work in progress. It is utilized both as an archival tool for processing and description, as well as an updated finding aid for users. In this way, users are able to track and access our most current descriptive data. Its ongoing stage is ownershipan intermediate one: the creation of fonds & collection level entries of all holdings based in Banjaluka are now complete, while this operation is currently conducted for the holdings in the regional offices. At the same time, we are conducting a more refined description on lower levels, with some digital object access.

Advantages of linux systems

Proven stableness of (free/libre and opensource software – FLOSS) primarily Linux operating systems, is one of its of recognizable advantages that have been proven in several studies. IBM explained that the conducted stress-test showed that the Linux kernel with the associated stable and reliable operating system components and the user can ensure reliability in a highly demanding environment during longer period (cf. Cybersource, 2004).

Linux operating systems are safer because most malware (viruses, worms, etc.) do not target Linux and free software, but are written to cause harm to Windows users because that way they will cause more overall harm.There are about 60,000 known viruses that attack Windows systems, about 40 of them target Macintosh computers, about 5 for commercial versions of Unix systems, and about 40 for Linux.

Most Windows viruses are harmless, but several hundred of them cause damage by spreading among computers.

National security

On the other hand, no Unix or Linux virus has been able to spread to other computers. Due to the possible threat to national security, many countries (for example, China, Russia and to some extent Germany) have decided to introduce systems based on open source in the public sector.

Security concerns were the main motivation behind the German parliament's decision to introduce Microsoft Windows XP to workstations. Ultimately, Microsoft allowed access to the source code to a select group of German experts. In its resolution Deutschlands Wirtschaft in der Informationsgesellschaft (Eng. German economy in the information society), the German parliament emphasized the role of open source software in terms of security.

Back in 2011, Russia announced a shift to open source software due to the desire to reduce dependence on foreign producers of commercial licensed software and for national security reasons.

In existing practice, two basic models of migration to free software are imposed:

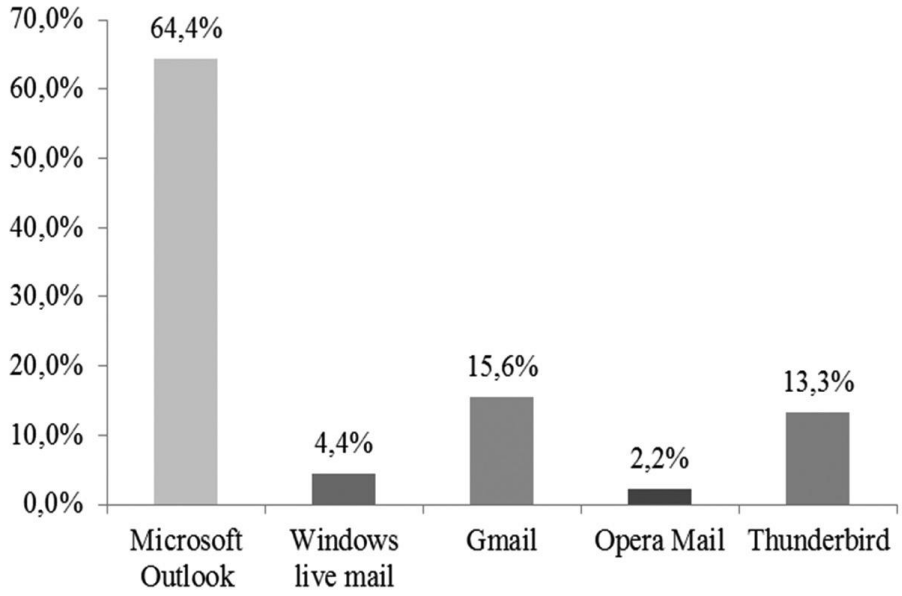
- Full migration to free software on all computers on which it is operationally possible to replace the operating system (most often switching to one of the Linux distributions) and finding an alternative for the entire proprietary software in the form of FLOSS (e.g. MS Office is replaced by LibreOffice, MS Outlook Thunderbird, Corel Draw Inkscape, etc.)
- Partial migration to free software means that simultaneously the information system uses both proprietary and free software, that is, part of applications is changed depending on the quality, costs and strategy of the owner of the information system (for example, the Windows operating system is kept, but the office suite is replaced on one part of the computer).

Representation of the use of open source software in BIH

Picture 2: Overview of FLOSS applications that can be an alternative to proprietary software

Namjena softvera	*FLOSS alternativa*	*Vlasnički softver koji može zamijeniti*
Uredski paket	*LibreOffice*	*Microsoft Office*
	Apache OpenOffice	
E-mail	*Mozilla Thunderbird*	*Microsoft Outlook*
Antivirusni softver	*Bitdefender Antivirus Free Edition*	*Norton AntiVirus*
	Clam WIN	*McAfee*
Obrada fotografija	*GIMP*	*Adobe Photoshop*
Media	*VLC Player*	*Windows Media Player*
	SMPlayer	*Winamp*
	Miro	*Nero*
	K3b	
FTP program	*FileZilla*	*WinFTP*
		Cute FTP

The most commonly used tools for accessing e-mail in public service in BIH



The results indicate a greater popularity of FLOSS among users in this segment, unlike operating systems and office suites. According to the results, 68.8% of users use Microsoft's tools for access to e-mail, while Thunderbird (FLOSS's tool) is present in 13.3% of users.

Furthermore, respondents have mostly positive attitudes towards FLOSS and the majority believe that it is necessary to increase the representation of FLOSS in the information systems of local self-government. A small part of cities and archives in BiH have already replaced part of the proprietary software with FLOSS, including the office package, and successfully integrated it into its information systems. All of the above confirms that it is possible to replace some of the commercial software with suitable free alternatives software while maintaining the same level of efficiency.

Previous practice has shown that complete migration is rare, and successful complete migration is even rarer, and that the transition to free software actually means a symbiosis of proprietary and free software. Bearing in mind respondents' preferences, existing trends and experiences of European Union countries for the public administration of Bosnia and Herzegovina, the so-called model soft-migrations is recommended. Therefore, when choosing software, FLOSS should be taken as a realistic alternative in most workstations in cities and archives of Bosnia and Herzegovina.

SOURCES AND LITERATURE

Open Preservation Foundation (OPF)

Digital Preservation Coalition (DPC)

Archives and Records Association (ARA)

Mario Pezer - Marko Odak, Mostar – Filozofski fakultet Sveučilišta u Mostaru

"Access to Memory (AtoM)

Arhipedija, arhiv Republike Srpske http://arhipedija.com/index.php/md4b-qf3w-rkaq

POVZETEK

ODPRTOKODNE REŠITVE V ARHIVSKIH USTANOVAH

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Odprtokodne rešitve ponujajo arhivskim ustanovam učinkovito stroškovno alternativo, kadar se soočajo z omejenim proračunom. Ker ne zahtevajo licenčnih pristojbin, nudijo možnost spreminjanja in prilagajanja programske opreme brez obveznosti do proizvajalca, so odprtokodne rešitve lahko še posebej privlačne. Njihova finančna ugodnost omogoča ustanovam, da usmerijo vire v druge ključne vidike hrambe in dostopa do arhivskega gradiva.

Ena od glavnih prednosti odprtokodnih rešitev v arhivskih okoljih je njihova prilagodljivost. Ustanove namreč lahko prilagodijo programsko opremo svojim potrebam, različnim zbirkam, formatom in delovnim tokovom. Ta prilagodljivost je ključna v arhivskem okolju, saj raznovrstno arhivsko gradivo, ki sega od rokopisov do multimedije, zahteva ustrezne rešitve.

Odprtokodno programsko opremo je mogoče uporabiti v arhivskih ustanovah kot način za upravljanje in ohranjanje digitalnih vsebin. To omogočajo deloma fleksibilnost in stroškovna učinkovitost odprtokodnih rešitev, deloma pa tudi možnost, da ustanove uporabijo oziroma prilagodijo programsko opremo glede na svoje potrebe.

Primer takšne odprtokodne programske opreme, ki jo množično uporabljajo arhivske ustanove, je Archivematica. Ta programska oprema je sistem za digitalno hrambo, ki ustanovam omogoča vnašanje, ohranjanje in dostop do digitalnih vsebin. Vključuje funkcije, kot so identifikacija formata, normalizacija, izvleček metapodatkov in določanje dostopa.

Še en primer je Islandora, to je ogrodje za odprtokodno programsko opremo, zasnovano na Drupalu, ki se uporablja za gradnjo digitalnih repozitorijev. To orodje lajša upravljanje in uporabo digitalnih vsebin ter omogoča ustanovam oblikovanje prilagojenih delovnih tokov za vnašanje, ohranjanje in dostop do vsebin.

Odprtokodna programska oprema prav tako omogoča sodelovanje in izmenjavo med ustanovami. Takšen primer je model odprtega arhivskega informacijskega sistema

OAIS (Open Archival Information System), ki ga uporabljajo arhivi, knjižnice in muzeji. Gre za odprti standard, ki zagotavlja skupen okvir za upravljanje digitalnih vsebin.

Vse omenjene in podobne rešitve omogočajo ustanovam, da lažje delijo in izmenjujejo digitalne vsebine. Poleg tega mnoge arhivske ustanove tudi same prispevajo k odprtokodnim projektom, s tem ko delijo svoj lastni razvoj programske opreme in njenih sprememb ter jih lahko uporabijo tudi druge ustanove.

V splošnem postaja odprtokodna programska oprema v arhivskih ustanovah vse bolj priljubljena izbira, saj zagotavlja prilagodljivost, stroškovno učinkovitost in možnost spreminjanja ter prilagajanja lastnim potrebam. To daje ustanovam priložnost tako za boljše upravljanje in ohranjanje digitalnih vsebin kakor tudi za sodelovanje z drugimi ustanovami.

About the author:

Saša Đukić was born on February 22, 1986, in Banja Luka, where he completed the primary and secondary IT school. He graduated at the Faculty of Law in Banja Luka in 2015. He is the founder of the Association of anonymous artists UAA! that has organized and implemented many projects in Banja Luka. Since 2016, he has been employed at the Archives of the Republika Srpska in Banja Luka, as Head of the IT and Digitization Department, mostly using knowledge of creating and optimizing web sites, knowing the basics of html, css, javascript, php, sql languages. In the Archives of the Republic of Srpska he created and maintains the website of the Archives , installation of Atom and maintenance of the Linux server for the needs of Atom (Access to memory) Open-source web-based software, as well as its migration to the web at the domain arhipedija.com . He got training in: MCSA SQL 2016 Database Development; Php Web development. He is the secretary of the Archivist Association of Bosnia and Herzegovina. He is the member of the Commission for the professional exams for workers in the protection of public records outside the archives and a member of the Commission for taking the professional archival exam and recognizing professional archival titles. He is the author of the exhibition “Earthquake in Banja Luka 1969: solidarity, reconstruction and construction” from 2019.

O avtorju:

Saša Đukić se je rodil 22. februarja 1986 v Banjaluki, kjer je končal osnovno in srednjo računalniško šolo. Leta 2015 je diplomiral na Pravni fakulteti v Banjaluki. Je ustanovitelj Društva anonimnih umetnikov UAA!, ki je organiziralo in izvedlo številne projekte v Banjaluki. Od leta 2016 je zaposlen v Arhivu Republike Srbske v Banjaluki kot vodja Oddelka za informacijsko tehnologijo in digitizacijo. Večinoma uporablja znanje za oblikovanje in optimizacijo spletnih strani ter pozna osnove programskih jezikov html, css, javascript, php, sql. Za Arhiv Republike Srbske je oblikoval in vzdržuje spletno mesto arhiva, namestil je odprtokodno spletno programsko opremo Atom (Access to memory), vzdržuje strežnik Linux za potrebe programa Atom pa tudi njegovo migracijo na splet na domeni arhipedija.com. Opravil je usposabljanje za razvoj podatkovnih baz MCSA SQL 2016 in za razvoj spletnih aplikacij v programskem jeziku Php. Je tajnik Arhivskega društva Bosne in Hercegovine, član Komisije za strokovne izpite za delavce pri ustvarjalcih arhivskega gradiva in član Komisije za opravljanje strokovnega arhivskega izpita ter priznavanje strokovnih arhivskih nazivov. Je tudi avtor razstave »Potres v Banjaluki 1969: solidarnost, obnova in gradnja« iz leta 2019.