Second Information Day: Research Infrastructure Services in the Humanities and Social Sciences

Desislava Paneva-Marinova[0000-0001-5998-687X], Radoslav Pavlov,
Detelin Luchev[0000-0003-0926-5796], Maxim Goynov, Nikolay Noev[0000-0003-3290-1439]

Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia, Bulgaria
dessi@cc.bas.bg, radko@cc.bas.bg,
dml@math.bas.bg, qoynov@gmail.com, nickey@math.bas.bg

Abstract. The main results of the work of the team of Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences on the project CLaDA-BG – the Bulgarian National Interdisciplinary Research e-Infrastructure for Resources and Technologies in Favor of the Bulgarian Language and Cultural Heritage, Part of the EU Infrastructures CLARIN and DARIAH, will be presented during the Information Day within the DiPP2023 conference. The main emphasis will be placed on current and ongoing developments and implementations of CultIS - a web-based software platform for the intelligent digital management and presentation of large data sets and knowledge from the field of culture, humanities and social sciences.

Keywords: CLaDA-BG, CultIS, Research Infrastructure, Digital Humanities, Digital Content Management Systems, Intelligent Content Curation.

1 Introduction

Results of the work of the team of the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences (IMI-BAS), as a technological partner in CLaDA-BG, the Bulgarian National Interdisciplinary Research e-Infrastructure for Resources and Technologies in Favor of the Bulgarian Language and Cultural Heritage, Part of the EU Infrastructures CLARIN and DARIAH, will be presented during the Second Information Day: Research Infrastructure Services in the Humanities and Social Sciences.

CLaDA-BG is a leading initiative in Bulgaria, aiming to promote the innovative use of resources in order to encourage the sustainable development of European cultural landscapes in a digital environment (Simov, 2019).

Over the past year, the team continued with the work on the development and implementation of the environment for humanities and social sciences data storage, retrieval, and curation, following its goal of providing flexible and efficient access to multimedia representations of cultural and historical artifacts, supporting a variety of forms and formats of digital information content and rich functionality for interacting with it (Luchev et al., 2021).

2 *CultIS* – a Web-based Software Platform for Intelligent Digital Management and Presentation of Large Datasets and Knowledge in the Fields of Culture, Humanities and Social Sciences

Following its previous developments and considering the peculiarities of its implementation in various areas of the Bulgarian cultural and historical heritage, the team of IMI-BAS continues its work on improving the environment for storing, retrieving and curating data from the field of humanities and social sciences and on the development of solutions for intelligent digital management and presentation of objects and knowledge of the national cultural and historical heritage.

One of the main results of the work is *CultIS* – a web-based software platform for intelligent digital management and presentation of large datasets and knowledge in the fields of culture, humanities, and social sciences (https://cultis.math.bas.bg/). The main functionalities of the system are aimed at interactive virtual presentation of objects and collections, standard and complex search and grouping in various intersections, flexible management and structuring of metadata, data, object, multilayer indexing of data using dictionaries, *etc*.

The development of *CultIS* is aimed at achieving a high degree of adaptability in terms of building specific designs and user interfaces for the needs of specific environments. It has possibilities for implementation of additional modules and functionalities according to application areas and for importing data from various systems and formats.

CultIS is based on some of the most advanced and established software technologies.

3 *CultIS* Implementations

The implementations of *CultIS* have been created with the support of Ivan Vazov National Library - Plovdiv, Peyo Yavorov Regional Library - Burgas, Central Library of the Bulgarian Academy of Sciences, *etc*.

3.1 Completed Implementations

Digital Library "Virtual Encyclopedia of Bulgarian Iconography". The work is being done on the implementation of *CultIS* for storing, retrieving and curating data from the field of Bulgarian iconographic art. The library contains several hundred specimens of Bulgarian icons from different artists, historical periods, and schools. It provides and manages complex services (heterogeneous, autonomous and distributed), processes and information workflows. The flexibility, the automatic adaptation, the universal access anywhere and anytime, the decentralization, the wide variety of digital objects and collections, the information security, *etc*. are some of the requirements considered in the library implementation.

Virtual walk in the Church of Nativity in Arbanasi is integrated with the Digital Library "Virtual Encyclopedia of Bulgarian Iconography" as a result of co-operation between IMI-BAS and Institute for Computer Science and Control (SZTAKI), Hungary (Zsolt et al., 2022).

The Digital Library "Virtual Encyclopedia of Bulgarian Iconography" is available at: https://bidl.math.bas.bg/en.

Digital Library - Public Library Ivan Vazov – Plovdiv. The *CultIS* platform is implemented for the needs of the "Ivan Vazov" Regional Library in Plovdiv of storing, retrieving and curating data from the field of humanities and social sciences, regarding the large volume of over 1,460,000 library items - scientific literature and fiction; manuscripts, rare and valuable publications; rich reference fund; Bulgarian and foreign periodicals; audio-visual documents; original works of art, *etc.* (Paneva-Marinova et al., 2022).

The Digital Library - Public Library Ivan Vazov – Plovdiv is available at: https://digital.libplovdiv.com/.

3.2   Work-in-progress. Experimental and Test Implementation of *CultIS*

"Peyo Yavorov" Regional Library – Burgas. In an advanced phase is the work on application of *CultIS* for the needs of "Peyo Yavorov" Regional Library - Burgas in connection with its association as a partner of CLaDA-BG. Various collections of periodicals, printed materials, maps, manuscripts, etc. will be gradually included, while optimizing specialized functionality for the needs of library users.

The collection of posters stored in the "Peyo Yavorov" Regional Library - Burgas is available at: https://plakati.bg73.net/bg.

Central Library of BAS - Digital Collections. The implementation of *CultIS* for the needs of the Central Library of BAS began with the work on one of the noteworthy collections of CL-BAS, associated with the international congresses of Bulgarian studies from the 1980s (the Bulgarica Collection) and consisting of more than of more than nine hundred scientific papers and reports. Because of the challenges during the implementation of *CultIS* for the needs of the Central Library of BAS related to the migration of data from an older platform used as a digital storage and from separate archive units, new modules were designed and implemented.

The digital collections of the paper of the First International Congress of Bulgarian Studies and the Second International Congress of Bulgarian Studies are available at: https://clbas.bg73.net/.

4   Conclusions

The development and implementation of a web-based software platform for intelligent digital management and presentation of large datasets and knowledge in the fields of culture, humanities and social sciences *CultIS* demonstrates the potential of information technology to support the work of researchers in the humanities and social sciences. *CultIS* offers specific and individual solutions for the needs of various libraries and museums in terms of intelligent digital management and presentation of national heritage and knowledge therein. The results of the research activity are aimed at the partners of the CLaDA-BG network, but they can be used and applied also in other cultural and scientific institutions outside of it.

The next steps for the implementations of *CultIS* concern development of a new environment for the needs of "Encyclopaedia Slavica Sanctorum" (https://eslavsanct.net/). IMI-BAS joint research project partners in other countries are also showing interest in the implemetation of the software platform *CultIS.* At the same time, the development and improvement of *CultIS* is directly related to its application for different needs, as this puts the team of IMI-BAS in front of new challenges and problems that need to be investigated and solved.

Acknowledgements.

References

Luchev, D., Goynov, M., Paneva-Marinova, D., Stoykov, J., & Pavlova, L. (2021). Synergy of National Cultural Heritage and Technology. *Digital Presentation and Preservation of Cultural and Scientific Heritage, 11*, 281–286. https://doi.org/10.55630/dipp.2021.11.26

Márkus, Z. L., Szkaliczki, T., Szántó, G., Veres, M., Weisz, Z., Luchev, D., Paneva-Marinova, D., Goynov, M., Pavlov, R., & Pavlova, L. (2022). Virtual Walk in the Church of Nativity in Arbanasi. *Digital Presentation and Preservation of Cultural and Scientific Heritage, 12*, 63–74. https://doi.org/10.55630/dipp.2022.12.4

Paneva-Marinova, D., Minev, D., Krachanov, I., Luchev, D., Goynov, M., Zlatkov, L., Pavlov, R., & Pavlova, L. (2022), The Power of Intelligent Content Curation and Context-Based Digital Library Content Usage for Research and E-Learning (The Case of National Library "Ivan Vazov" – Plovdiv, Bulgaria). In *INTED2022 Proceedings. 16th International Technology, Education and Development Conference* (pp. 4013-4021). https://doi.org/10.21125/inted.2022.1097

Simov, K. (2019). Integrated Language and Knowledge Resources for a Bulgarian-Centric Knowledge Graph. *Digital Presentation and Preservation of Cultural and Scientific Heritage, 9,* 65–74. https://doi.org/10.55630/dipp.2019.9.5