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Electronic Research Infrastructure for Bulgarian Medieval Written Heritage: history and perspectives

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Abstract

The paper traces the history of the *Histdict* system, which turned into a basis for the new *Electronic Research Infrastructure for Bulgarian Medieval Written Heritage*, which was included into the National Research Roadmap at the end of 2020. Through this act the state declares its support to our resources, that have been so far created and supported by project funding. And of course, it is a big recognition of our efforts and achievements. On the other hand, this act coincided with two other events: the inclusion of RESILIENCE (Research Infrastructure on Religious Studies) in which *Histdict* is taking part, in the European Research Infrastructures Roadmap and the start of the updating and upgrading of the system. Given the situation the Infrastructure is now facing new challenges—not only the successful improvement of the services it offers, but also the inclusion of the Orthodox Cultural Heritage into European research exchange, which will promote and popularize the history and culture of Southeastern Europe.

1. Introduction

The *Electronic Research Infrastructure for Bulgarian Medieval Written Heritage* started in 2009 as a doctoral and post-doctoral project BG051PO001-3.3-04-001 ICT Tools for Historical Linguistic Studies, funded by the European Social Fund, OP Human Resources, and was upgraded by three following projects under the same scheme:

- BG051PO001-4.3.04-0004 *E-Medievalia (Electronic Resources for Distant Learning in Medieval Studies)* (2012–2014)
- BG051PO001-3.3.06-0024 *Informatics, Grammar, Lexicography* (2012–2015)
- BG05M2OP001-2-009-0005 *Modern Palæoslavonic and Medieval Studies* (2017–2019)[1]

In the periods when our activities were not covered by European funding, we used other project opportunities such as internal funding in the framework of the University Humanities Complex, in which we participated with the project *Digital Medievalia* (2016–2018). Since the end of 2019 the RI has been supported by the National Research Programme "Cultural Heritage, National Memory and Social Development" funded by the Ministry of Education and Science and coordinated by Sofia University as a leading research institution in the field of Humanities. In the meantime, we were allocated a substantial amount of money for upgrading the existing digital resources under the project *Heritage BG* funded by Science and Education for Smart Growth Operational Programme (*nasledstvo.bg*). Now, after two years spent for unsuccessful bids, we have selected an IT company that is supposed to fulfil this important task.

In 2019 we applied for becoming a part of the National Roadmap for RIs and at the end of 2020 our digital resources were officially accepted as a starting RI.

Since March 2018 we have been involved in two overlapping ESFRI projects aiming at becoming

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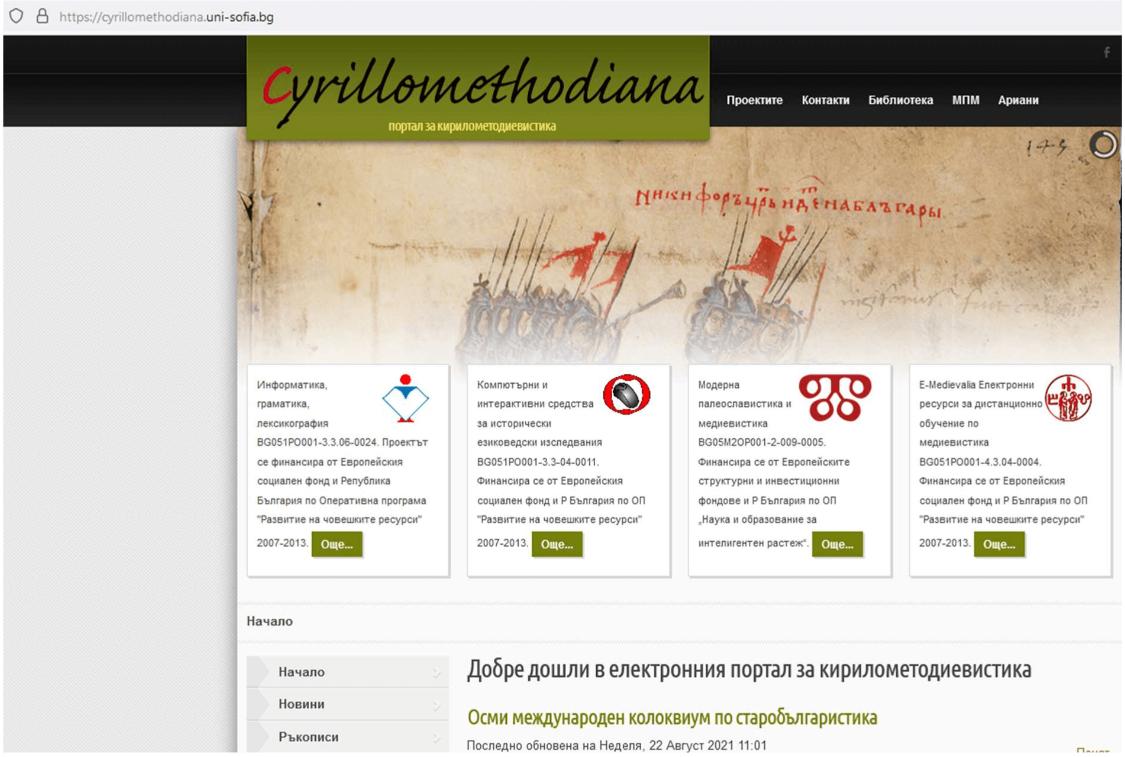
[1] The projects' goals and results have been constantly reported and popularised, see Ganeva (2018), Totomanova (2012, 2017, 2018), Totomanova-Paneva (2020).

a European RI on Religious Studies (ReIReS[2], RESILIENCE[3]). Therefore, we have not been able so far to count on a stable funding on behalf of the state and we had to finance our work under different kinds of project initiatives in order to survive and implement our plans to produce a complex of digital resources for studying and popularising Bulgarian written heritage. Our resources are included in the *Cyrillomethodiana* web portal where you can find detailed information about all our projects related to the RI. The partnership consists of 3 institutions: Sofia University "St. Kliment Ohridski", Cyrillo-Methodian Research Center at Bulgarian Academy of Sciences, BAS Central Library.



Информатика, граматика, лексикография BG051PO001-3.3.06-0024. Проектът се финансира от Европейския социален фонд и Република България по Оперативна програма "Развитие на човешките ресурси" 2007-2013. Още...

Компютърни и интерактивни средства за исторически езиковедски изследвания BG051PO001-3.3-04-0011. Финансира се от Европейския социален фонд и Р България по ОП "Развитие на човешките ресурси" 2007-2013. Още...

Модерна палеославистика и медиевистика BG05M2OP001-2-009-0005. Финансира се от Европейските структурни и инвестиционни фондове и Р България по ОП „Наука и образование за интелигентен растеж". Още...

E-Medievalia Електронни ресурси за дистанционно обучение по медиевистика BG051PO001-4.3.04-0004. Финансира се от Европейския социален фонд и Р България по ОП "Развитие на човешките ресурси" 2007-2013. Още...

Добре дошли в електронния портал за кирилометодиевистика

Осми международен колоквиум по старобългаристика

Последно обновена на Неделя, 22 Август 2021 11:01

Figure 1: *Cyrillomethodiana* web portal, *cyrillomethodiana.uni-sofia.bg*

But why the written heritage?

The written heritage is the most reliable source of history of every nation and country and the basis of the national identity. Our RI provides digital research resources and tools for studying Bulgarian Medieval written heritage in terms of *diachronic linguistics*, *literary history*, *Bulgarian and European history*, *theology*, *cultural history*, and *philosophy*. The Old Bulgarian language (Old Church Slavonic), created by the Holy Brothers Cyril and Methodius, functioned as a sacred language of all Orthodox Slavs in Southeastern Europe during the Middle Ages as well as in Romania and Moldova. That is why researchers in the field of the history and culture of the Slavo-Byzantine Medieval world are interested in using the available digital resources.

And why electronic?

a) Using digital technologies for publishing and processing medieval texts reduces the time of data collection and production of reliable research results. In other words, the introduction of digital technologies in such a conservative field as historical humanities not only optimizes the work of researchers but also creates the conditions for new research initiatives and projects.

b) Digital tools make the field of historical humanities more attractive for young people born in the digital era.

[2] See *reires.eu*.

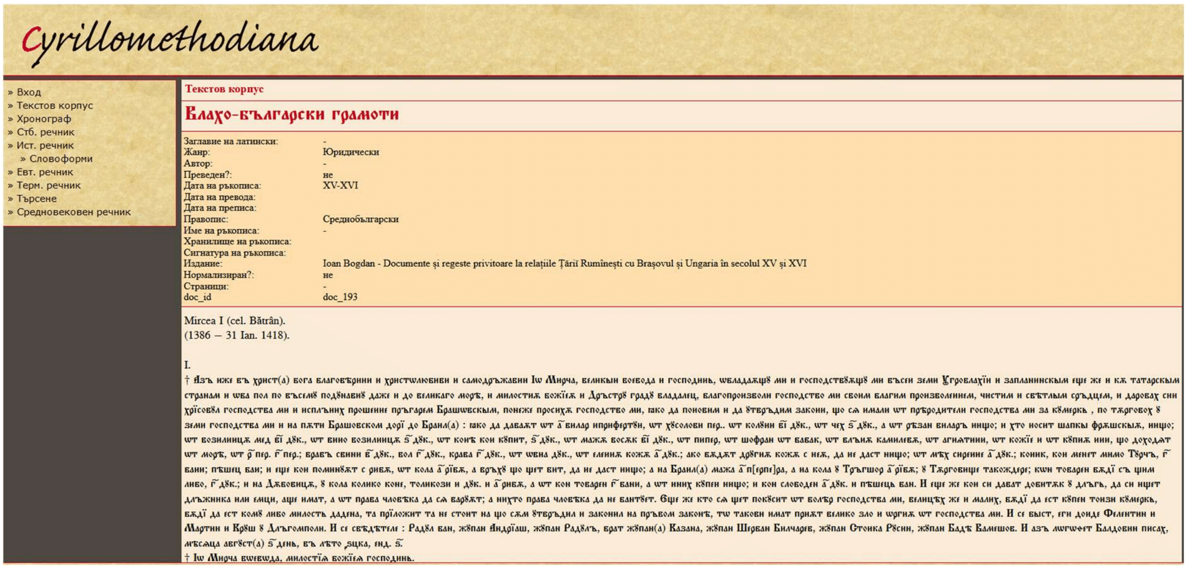
[3] See *resilience-ri.eu*.

2. Our digital resources and tools

As you can see the electronic research resources and tools for processing medieval texts of proven Bulgarian origin have been created in a period spanning over 10 years through a series of scientific and educational projects. The *Histdict* system includes the following digital resources and tools:

2.1. Diachronic corpus of Bulgarian language 9th–18th cc.

The Corpus contains more than 150 texts of proven Bulgarian origin from different genres of the 10th–18th cc. and has its own specific software that allows for textual and paleographic annotation. Given the fact that the Bulgarian literature transmitted the Byzantine cultural and literary model to the other Orthodox nations in our part of Europe the Corpus contains both translated and original Medieval Bulgarian texts. The texts are digitally typed and all of them (excluding the works of St. Kliment Ohridski) are reproduced in the orthography, in which they survived (Bulgarian, Serbian or Russian). The Corpus includes also Early Modern Bulgarian texts mostly Damaskini and other compilations as well as some not literary texts such as scribal notes, inscriptions, and juridical documents. Back in 2011 we had only 75 texts whereas now their number has doubled, and we continue uploading new texts. Some of them are provided by colleagues abroad who also use the corpus. One of the largest texts uploaded on to system is the so-called *Chronograph of the Archive* or *Jewish Chronograph* that includes the oldest text of the Octateuch and Kingdoms translated in Bulgaria during the reign of Simeon the Great (893–927). Each text is introduced by the respective archæographic data (title, source, dating, orthography, author etc.). The corpus software needs upgrading to allow for other types of annotation: morphological and content annotation.



Текстов корпус

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Mircea I (cel. Bătrân).
(1386 – 31 Ian. 1418).

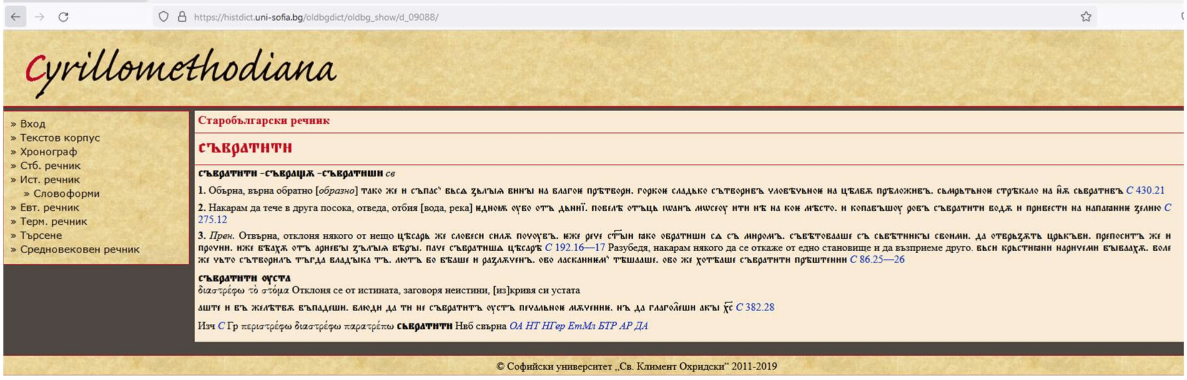
I.
† Азъ иже въ христ(а) бога благовѣрнии и христѡлюбиви и самодръжавни Іѡ Мирча, великыи воевода и господинь, ѡбладаѫщꙋ ми и господствꙋѫщꙋ ми въсеи земи Ꙋгровлахїи и запланинскым еще же и къ татарскым странам и ѡба пол по въсемꙋ подꙋнавиꙋ даже и до великаго морѣ, и милостиѫ божїеѫ и Дръстрꙋ градꙋ владалец, благопроизволи господство ми своим благим произволеинем, чистим и свѣтлым сръдцем, и даровах сии хрїсовꙋл господства ми и испл҄ъних прошение пръгарем Брашѡвскым, понеже просихѫ господство ми, ꙗко да поновим и да ꙋтвръдим закони, що сѧ имали ѡт прѣродители господства ми за кꙋмеркь , по тѫрговох ꙋ земи господства ми и на пѫти Брашовском дорї до Браил(а) : ꙗко да даваѫт ѡт а҃ вилар ипрнфертꙋи, ѡт хꙋсолови пер.. ѡт колꙋни вї дꙋк., ѡт чех ѕ҃ дꙋк., а ѡт рѣзан виларъ нищо; и хто носит шапкы фрѫшскыѫ, нищо; ѡт возилницѫ мед вї дꙋк., ѡт вино возилницѫ ѕ҃ дꙋк., ѡт коиѣ кои кꙋпит, ѕ҃ дꙋк., ѡт мажѫ восѧк вї дꙋк., ѡт пипер, ѡт шофран ѡт бабак, ѡт влъиѫ камилевѫ, ѡт агнѧтини, ѡт кожїе и ѡт кꙋпиѫ инии, що доходѫт ѡт морѣ, ѡт р҃ пер. г҃ пер.; бравъ свини в҃ дꙋк., вол г҃ дꙋк., крава г҃ дꙋк., ѡт ѡвна дꙋк., ѡт елениѫ кожѫ а҃ дꙋк.; ако бѫдѫт дрꙋгиѫ кожѫ с неѫ, да не даст нищо; ѡт мѣх сирение а҃ дꙋк.; коник, кои менет мимо Тꙋрчъ, г҃ бани; пѣшец бан; и еще кои поминꙋѫт с рибѫ, ѡт кола а҃ рїбѫ, а връхꙋ що щет бит, да не даст нищо; а на Браил(а) мажа а҃ п[ерпе]ра, а на кола ꙋ Тръгшор а҃ рїбѫ; ꙋ Тѫрговище такождере; кѡи товарен бѫдї съ щим либо, г҃ дꙋк.; и на Дѫбовицѫ, ꙋ кола колико коне, толикози и дꙋк. и а҃ рибѫ, а ѡт кои товарен г҃ бани, а ѡт иних кꙋпеи нищо; и кои слободен а҃ дꙋк. и пѣшець бан. И еще же кои си дават добитѫк ꙋ длъгъ, да си ищет длъжника или емци, аще имат, а ѡт права чловѣка да сѧ варꙋѫт; а нихто права чловѣка да не бантꙋет. Єще же кто сѧ щет покꙋсит ѡт болѣр господства ми, велицѣх же и малих, бѫдї да ест кꙋпен тоизи кꙋмеркь, бѫдї да ест комꙋ либо милость дадена, та прїложит та не стоит на що сѫм ꙋтвръдил и законил на пръвом законѣ, тѡ такови имат приѫт велико зло и ѡргиѫ ѡт господства ми. И се быст, еги донде Фелентин и Мартин и Крꙋш ꙋ Длъгомполи. И се свѣдѣтеле : Радꙋл бан, жꙋпан Андрїаш, жꙋпан Радꙋлъ, брат жꙋпан(а) Казана, жꙋпан Шербан Билчарев, жꙋпан Стоика Рꙋсин, жꙋпан Бадѣ Вамешов. И азъ логѡфет Балдовин писах, мѣсѧца авгꙋст(а) ѕ҃ день, въ лѣто ҂ѕцка, енд. ѕ҃.
† Іѡ Мирча воевода, милостїѫ божїеѫ господинь.

Figure 2: Diachronic corpus, *histdict.uni-sofia.bg*

2.2. Digitized Old Bulgarian dictionary (10 500 dictionary entries)

Our main goal under the first project was to compile an electronic *Historical dictionary of Bulgarian language* and we decided that the easiest way to achieve it was to take the *Old Church Slavonic Dictionary*[4] compiled and published by Institute for Bulgarian Language to the BAS as a basis for this dictionary. That is why we started digitizing the *Old Church Slavonic Dictionary* but in two years we managed to digitize only 10 000 of its entries, and the remaining 500 entries were digitized later under the second project since they do not comply with the entire format of the other entries or contained different types of errors and had to be processed one by one. The full electronic version of this dictionary is now available online and contains the lexis of the Classical OCS manuscripts of 10th–11th cc.

[4] Старобългарски речник. Т.I, 1999. София, Валентин Траянов, 1027 с. Т. II, 2009. Валентин Траянов, 1325 с.



Старобългарски речник

съвратити

съвратити -съвращѫ -съвратиши *се*

1. Обърна, върна обратно [*образно*] тако же и съпас҄ вьса ꙃълыꙗ вины на благоѥ прѣтвори. горкоѥ сладько сътворивъ чловѣчьноѥ на цѣлѫ прѣложивъ. съмрьтноѥ стрѣкало на н҄ѫ съвративъ *C* 430.21

2. Накарам да тече в друга посока, отведа, отбия [вода, река] ѥдноѭ оубо отъ дьниӥ. повелѣ отьць иоанъ мωсеоу ити нѣ на коѥ мѣсто. и копавъшоу ровъ съвратити водѫ и привести на напаꙗниѥ ꙃелию *C* 275.12

3. *Прен.* Отвърна, отклоня някого от нещо цѣсарь же словеси силѫ почоувъ. иже рече с҃тыи ꙗко обратиши сѧ съ миромъ. съвѣтоваше съ съвѣтникы своими. да отврьзѫть црькъви. препостъ же и прочии. иже бѣахѫ отъ ариевы ꙃълыꙗ вѣры. паче съвратиша цѣсарѣ *C* 192.16—17 Разубедя, накарам някого да се откаже от едно становище и да възприеме друго. вьси крьстиꙗни нарицѣми бывахѫ. воле же чьто сътворилъ тъгда владыка тъ. лютъ бо бѣаше и раꙁлѫченъ. ово ласканиѥм҄ тѣшааше. ово же хотѣаше съвратити прѣщении *C* 86.25—26

съвратити оуста
διαστρέφω τὸ στόμα Отклоня се от истината, заговоря неистини, [из]кривя си устата

ашт҄е и въ желѣтвѫ въпадеши. блюди да ти не съвратитъ оустъ печальноѥ мѫчениѥ. нъ да глаго҄леши акы х҃с *C* 382.28

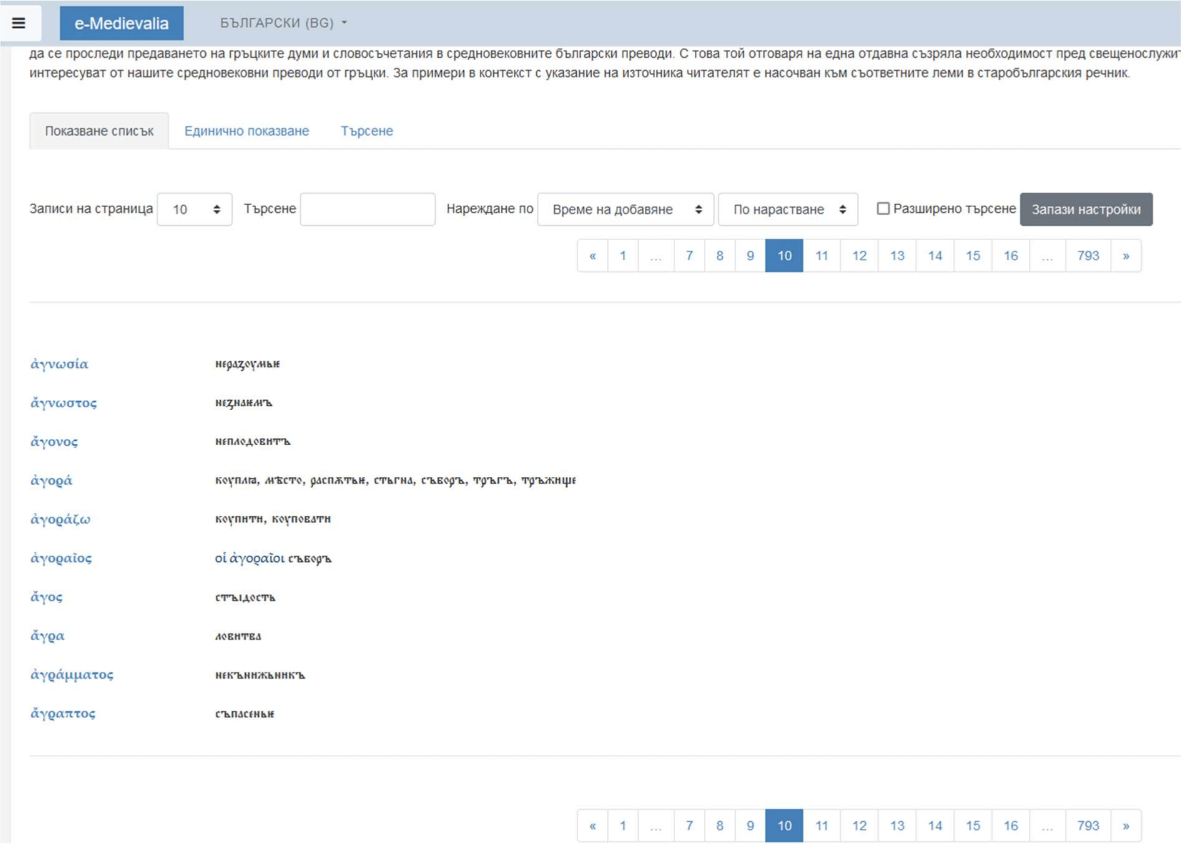
Изч *C* Гр *περιστρέφω διαστρέφω παρατρέπω* съвратити Нвб свърна *ОА НТ НГер ЕтМл БТР АР ДА*

© Софийски университет „Св. Климент Охридски“ 2011-2019

Figure 3: Old Bulgarian Dictionary online, *histdict.uni-sofia.bg*

2.3. *Reverse Greek–Old Bulgarian dictionary*

The structured XML document that included all entries of the Old Bulgarian Dictionary was used to produce a reversed Greek-Old Bulgarian Dictionary, which is also available online and is widely used by colleagues who deal with the metaphrastic practices of Old Bulgarian men of letters. The reverse dictionary was a spin-off result of E-Medievalia project that produced an interactive teaching-learning platform in Medieval Studies. The platform contains 24 interactive courses for both under- and postgraduate students in the area of Philology, Philosophy, Theology, History and Arts, among them there are courses of Old Bulgarian (OCS), Old Bulgarian literature and History of Bulgarian, which are available also in English. The platform is combined with a virtual classroom, that we used for workshops and conferences. When the pandemic started this digital resource allowed us to start immediately the on-line teaching.



да се проследи предаването на гръцките думи и словосъчетания в средновековните български преводи. С това той отговаря на една отдавна съзряла необходимост пред свещенослужи
интересуват от нашите средновековни преводи от гръцки. За примери в контекст с указание на източника читателят е насочван към съответните леми в старобългарския речник.

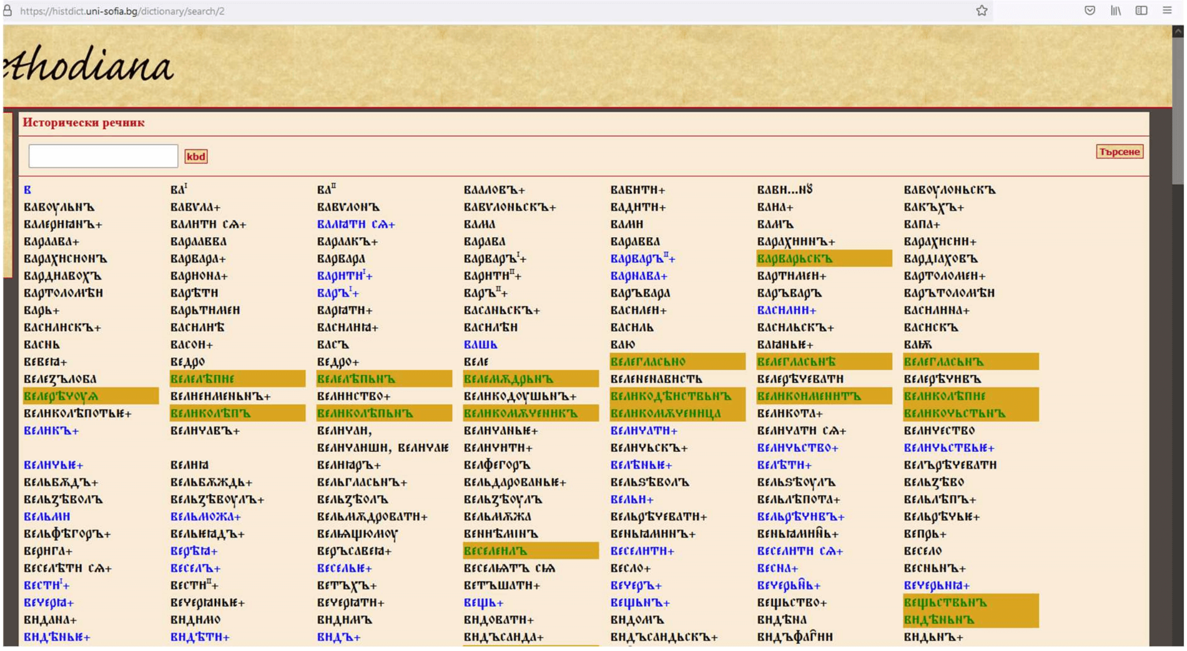
Записи на страница 10 Търсене Нареждане по Време на добавяне По нарастване □ Разширено търсене

ἀγνωσία	неразоумьѥ
ἄγνωστος	неꙁнаѥмъ
ἄγονος	неплодовитъ
ἀγορά	коуплꙗ, мѣсто, распѫтиѥ, стьгна, съборъ, тръгъ, тръжище
ἀγοράζω	коупити, коуповати
ἀγοραῖος	οἱ ἀγοραῖοι съборъ
ἄγος	стꙑдость
ἄγρα	ловитва
ἀγράμματος	некънижьникъ
ἄγραπτος	съпасениѥ

Figure 4: Greek–Old Bulgarian Dictionary online, *e-medievalia.uni-sofia.bg*

2.4. *Historical dictionary of the Bulgarian language (a developing resource of diachronic type)*

The design of the historical dictionary software turned out to be the biggest challenge for the project team and especially for our ICT specialists, since as mentioned above, we decided to edit and upgrade the digitized version of the Old Bulgarian Dictionary, complementing it with new entries and new meanings in the old entries. Neither linguists nor ICT specialists were aware of how difficult this task might be. Only by the end of 2014, a few months before the end of the project "Informatics, Grammar, Lexicography" we finally received a software product that allowed for both editing old entries and adding new ones and started compiling the Historical Dictionary of Bulgarian. The Christian Terminology that had not been studied properly since Fr. Miklosich published his famous study in 1876 was the first lexical group to be included into the Historical dictionary (Miklosich, 1876). The constantly developing version of this dictionary is also available online and the new and edited entries appear in colors—green or blue. Recently the historical dictionary has been complemented with the entries or specific meanings taken from the synchronous historical dictionaries that contain the lexis of a single writer or a group of writers or some specialized lexis.



Исторически речник

в	ва^{I}	ва^{II}	валловъ+	вабити+	вави...нѹ	вавоулоньскъ
вавоульнъ	вавѵла+	вавѵлонъ	вавѵлоньскъ+	вадити+	ваиа+	вакъхъ+
валериꙗнъ+	валити сѧ+	валꙗти сѧ+	вама	вами	вамъ	вапа+
вараава+	вараавва	вараакъ+	варава	варавва	варахиинъ+	варахисии+
варахисионъ	варвара+	варвара	варваръ^{I}+	варваръ^{II}+	варварьскъ	вардіаховъ
вардиавохъ	варнона+	варити^{I}+	варити^{II}+	варнава+	вартимеи+	вартоломеи+
вартоломѣи	варѣти	варъ^{I}+	варъ^{II}+	варъвара	варъваръ	варътоломѣи
варь+	варьтимеи	варꙗти+	васаньскъ+	василеи+	василии+	василина+
василискъ+	василиѣ	василиꙗ+	василѣи	василь	васильскъ+	васискъ
васиь	васои+	васъ	вашь	ваю	ваꙗнье+	ваѭ
вевеꙗ+	ведро	ведро+	веле	велегласьно	велегласьнѣ	велегласьнъ
велезълова	велелѣпие	велелѣпьнъ	велемѫдрьнъ	велененависть	велерѣчевати	велерѣчивъ
велерѣчоуѩ	велиеименьнъ+	велиинство+	великодоушьнъ+	великодѣиствьнъ	великоименитъ	великолѣпие
великолѣпотье+	великолѣпъ	великолѣпьнъ	великомѫченикъ	великомѫченица	великота+	великочьстьнъ
великъ+	величавъ+	величаи,	величанье+	величати+	величати сѧ+	величество
		величаиши, величаѥ	величити+	величьскъ+	величьство+	величьствье+
величье+	велиꙗ	велиꙗръ+	велфегоръ	велѣнье+	велѣти+	велъречевати
вельбѫдъ+	вельбѫждь+	вельгласьнъ+	вельдарованье+	вельѕѣволъ	вельѕѣоулъ	вельзѣво
вельзѣволъ	вельзѣвоулъ+	вельзѣолъ	вельзѣоулъ	вельи+	вельлѣпота+	вельлѣпъ+
вельми	вельможа+	вельмѫдровати+	вельмѫжа	вельрѣчевати+	вельрѣчивъ+	вельрѣчье+
вельфѣгоръ+	вельеꙗдъ+	велѭщюмоу	вениѣмінъ	веньꙗминъ+	веньꙗмин҃ь+	вепрь+
верига+	верѣꙗ+	веръсавеꙗ+	веселенаъ	веселити+	веселити сѧ+	весело
веселѣти сѧ+	веселъ+	веселье+	веселѭтъ сѩ	весло+	весна+	весньнъ+
вести^{I}+	вести^{II}+	ветъхъ+	ветъшати+	вечеръ+	вечерьн҃ь+	вечерьнꙗ+
вечерꙗ+	вечерꙗнье+	вечерꙗти+	вещь+	вещьнъ+	вещьство+	вещьствьнъ
видана+	видимо	видимъ	видовати+	видомъ	видѣна	видѣньнъ
видѣнье+	видѣти+	видъ+	видъсанда+	видъсандьскъ+	видъфаг҃ии	видьнъ+

Figure 5: Historical Dictionary, *histdict.uni-sofia.bg*

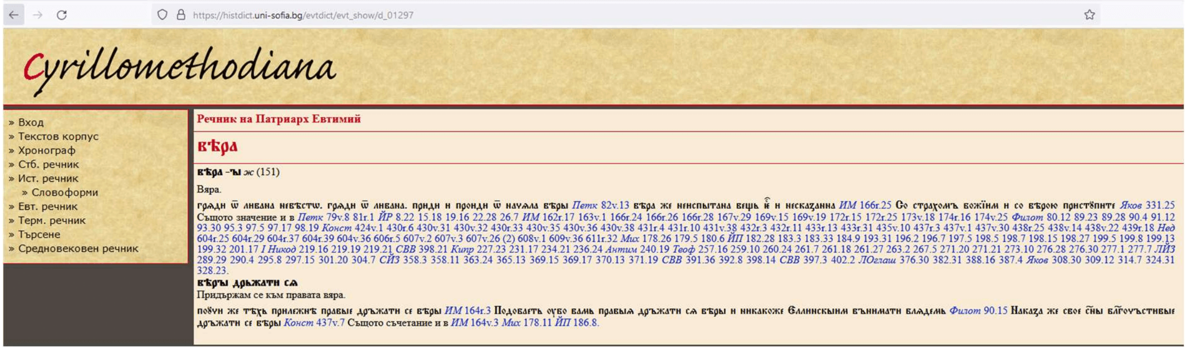
2.5. *Synchronous historical dictionaries*

Trying to expand and test the use of digital tools under the project "Modern Palæoslavonic and Medieval Studies" we produced two dictionaries of this type: *Patriarch Euthymius' Language dictionary* and *Terminological dictionary of John the Exarch*. Both dictionaries also have paper versions[5] and the second part of *Patriarch Euthymius' Language dictionary* was financed by the National Research Programme.

For compiling the dictionary entries an alphabetical list of all word forms in Patriarch Euthymius' writings contained in the corpus was produced electronically. The list shows the title of the opus and the exact place the forms occur and allows a quick work lemmatization.

A similar list for the terminological dictionary was also made available, but given the complexity of the task we decided to limit the linguistic material and explore the terminology of John the Exarch's *Hexaemeron* and *Theology*. As a result, around a 1000 of terms were included into this specialized dictionary.

[5] Речник на езика на Патриарх Евтимий. Част I. Ꙗ–Ꙇ, Част II. О–Ѫ. УИ „Св. Климент Охридски", София, 2019, 2020; Терминологичен речник на Йоан Екзарх. София, 2019.


https://histdict.uni-sofia.bg/evtdict/evt_show/d_01297

Cyrillomethodiana

» Вход
» Текстов корпус
» Хронограф
» Стб. речник
» Ист. речник
» Словоформи
» Евт. речник
» Терм. речник
» Търсене
» Средновековен речник

Речник на Патриарх Евтимий

вѣра

вѣра -ы *ж* (151)

Вяра.

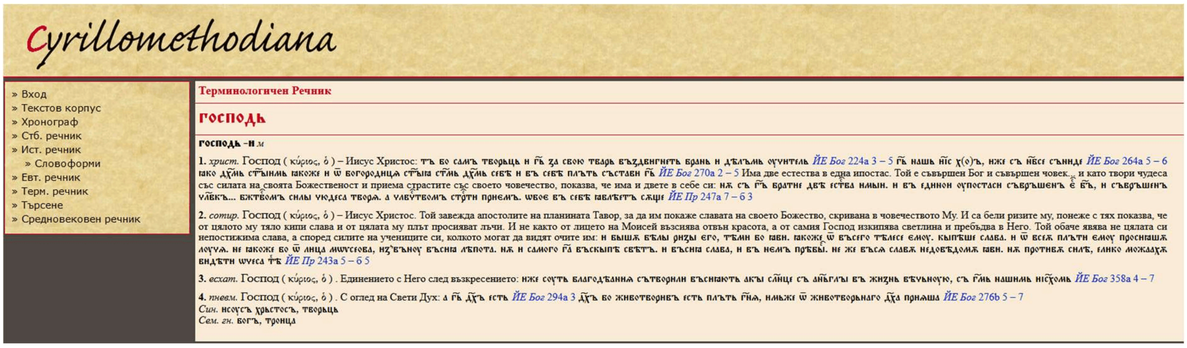
грѧди ѿ ливана невѣстѡ. грѧди ѿ ливана. приди и проиди ѿ начѧла вѣры *Петк* 82v.13 вѣра же неиспытана вещь ѥ҆ и несказанна *ИМ* 166r.25 Со страхомъ божїим и со вѣрою пристѫпите *Яков* 331.25 Същото значение и в *Петк* 79v.8 81r.1 *ЙР* 8.22 15.18 19.16 22.28 26.7 *ИМ* 162r.17 163v.1 166r.24 166r.26 166r.28 167v.29 169v.15 169v.19 172r.15 172r.25 173v.18 174r.16 174v.25 *Филот* 80.12 89.23 89.28 90.4 91.12 93.30 95.3 97.5 97.17 98.19 *Конст* 424v.1 430r.6 430v.31 430v.32 430r.33 430v.35 430v.36 430v.38 431r.4 431r.10 431v.38 432r.3 432r.11 433r.13 433r.31 435v.10 437r.3 437v.1 437v.30 438r.25 438v.14 438v.22 439r.18 *Нед* 604r.25 604r.29 604r.37 604r.39 604v.36 606r.5 607v.2 607v.3 607v.26 (2) 608v.1 609v.36 611r.32 *Мих* 178.26 179.5 180.6 *ЙП* 182.28 183.3 183.33 184.9 193.31 196.2 196.7 197.5 198.5 198.7 198.15 198.27 199.5 199.8 199.13 199.32 201.17 *I Никод* 219.16 219.19 219.21 *СВВ* 398.21 *Кипр* 227.23 231.17 234.21 236.24 *Антим* 240.19 *Теоф* 257.16 259.10 260.24 261.7 261.18 261.27 263.2 267.5 271.20 271.21 273.10 276.28 276.30 277.1 277.7 *ЛИЗ* 289.29 290.4 295.8 297.15 301.20 304.7 *СИЗ* 358.3 358.11 363.24 365.13 369.15 369.17 370.13 371.19 *СВВ* 391.36 392.8 398.14 *СВВ* 397.3 402.2 *ЛОглаш* 376.30 382.31 388.16 387.4 *Яков* 308.30 309.12 314.7 324.31 328.23.

вѣры дрьжати сѧ

Придържам се към правата вяра.

поѹчи же тѣхь прилежнѣ правые дръжати се вѣры *ИМ* 164r.3 Подобаеть оубо вамь правыѧ дръжати сѧ вѣры и никакоже Єлинскыим вънимати владемь *Филот* 90.15 Наказа же свое с҃ны бл҃гоѹчестивые дръжати се вѣры *Конст* 437v.7 Същото съчетание и в *ИМ* 164v.3 *Мих* 178.11 *ЙП* 186.8.

Figure 6: *Patriarch Euthymius' Language dictionary*, *histdict.uni-sofia.bg*


Cyrillomethodiana

» Вход
» Текстов корпус
» Хронограф
» Стб. речник
» Ист. речник
» Словоформи
» Евт. речник
» Терм. речник
» Търсене
» Средновековен речник

Терминологичен Речник

господь

господь -и *м*

1. *христ.* Господ (κύριος, ὁ) – Иисус Христос: тъ бо самъ творьць и г҃ь за свою тварь въздвигнеть брань и дѣлъмь оучитель *ЙЕ Бог* 224а 3 – 5 г҃ь нашь і҆и҃с х(о)ъ, иже съ н҃бсе сънидє *ЙЕ Бог* 264а 5 – 6 ꙗко дх҃мь ст҃ыимь ꙗкоже и ѿ богородицѧ ст҃ыꙗ ст҃мь дх҃мь себѣ и въ себѣ плъть състави г҃ь *ЙЕ Бог* 270а 2 – 5 Има две естества в една ипостас. Той е съвършен Бог и съвършен човек... и като твори чудеса със силата на своята Божественост и приема страстите със своето човечество, показва, че има и двете в себе си: нѫ съ г҃ъ братие двѣ ес҃тва имыи. и въ единои оупостаси съвръшенъ ѥ҆ б҃ъ, и съвръшенъ ч҃лвкъ... бжтвомъ силы чюдеса творѧ. а ч҃лвчтвомъ стр҃ти приемъ. ѡбоє въ себѣ ꙗвлѣетъ сѫще *ЙЕ Пр* 247а 7 – б 3

2. *сотир.* Господ (κύριος, ὁ) – Иисус Христос. Той завежда апостолите на планината Тавор, за да им покаже славата на своето Божество, скривана в човечеството Му. И са бели ризите му, понеже с тях показва, че от цялото му тяло кипи слава и от цялата му плът просияват лъчи. И не както от лицето на Моисей възсиява отвън красота, а от самия Господ изкипява светлина и пребъдва в Него. Той обаче явява не цялата си непостижима слава, а според силите на учениците си, колкото могат да видят очите им: и бышѫ бѣлы ризы его, тѣми бо ꙗви. ꙗкоже ѿ въсего тѣлесе ємоу. кыпѣше слава. и ѿ всеѫ плъти ємоу просиꙗшѫ лоучѧ. не ꙗкоже бо ѿ лица мѡѵсеова, изъвъноу въсиꙗ лѣпота. нѫ и самого г҃а въскыпѣ свѣтъ. и въсиꙗ слава, и въ немъ прѣбы. не же въсѧ славѫ недовѣдомѫ ꙗви. нѫ противѫ силѣ, єлико можаахѫ видѣти ѡчеса т҃ѣ *ЙЕ Пр* 243а 5 – б 5

3. *есхат.* Господ (κύριος, ὁ) . Единението с Него след възкресението: иже соуть благодѣаниꙗ сътворили въсиꙗють акы с҃лнце съ а҃нгелы въ жизнь вѣчьноую, съ г҃мь нашимь і҆с҃хомь *ЙЕ Бог* 358а 4 – 7

4. *пневм.* Господ (κύριος, ὁ) . С оглед на Свети Дух: а г҃ь д҃хъ есть *ЙЕ Бог* 294а 3 д҃хъ бо животворивъ есть плъть г҃нѧ, имьже ѿ животворьнаго д҃ха приꙗша *ЙЕ Бог* 276b 5 – 7
Син. исоусъ христосъ, творьць
Сем. гн. богъ, троица

Figure 7: *Terminological dictionary of John the Exarch*, *histdict.uni-sofia.bg*

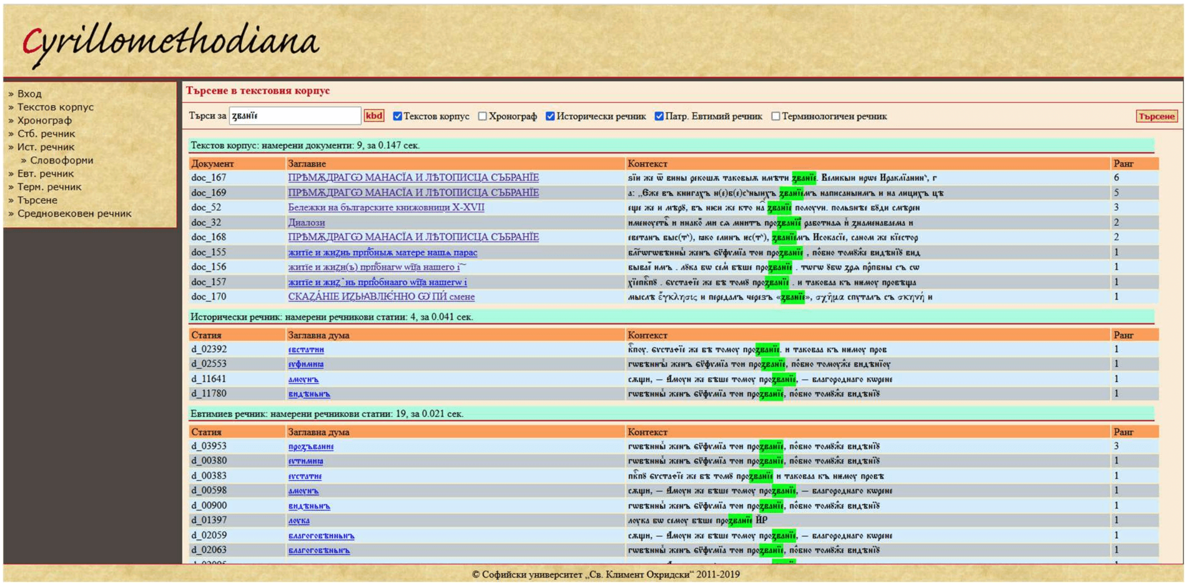
The specialized dictionary software for writing and editing dictionary entries seemed to be too complicated for the project participants—especially PhD and Postdoc students that had no experience under the previous projects. That is why we compiled the new dictionary entries in Word environment and included them into the respective specialized dictionaries through a converter. For this purpose, a special entry format was elaborated and observed. The converter for St. Patriarch Euthymius' dictionary turned out to be a great finding because it enabled us to convert more than 400 dictionary entries in few seconds. The online version of *Patriarch Euthymius' Language dictionary* is slightly different from the paper version, the latter reporting up to three examples under each identified meaning. The electronic dictionary, on the other hand, displays all occurrences of the lexemes in the text and allows quick access to the respective text in the corpus where the user can find the word and see and copy the respective contexts. It is done by a simple click on the signature.

We used a similar converter for the *Terminological dictionary* as well and now we are trying to elaborate another converter for digitizing the reverse Greek–Old Church Slavonic dictionary produced by Christov (2019). The dictionary contains 14 625 Greek entries, to which correspond 33 307 Greek–Slavonic parallels.

The converted dictionary entries allow for online redaction using the specialized software for the historical dictionary. However, given the complexity of this software, we intent to produce a converter for uploading the entries in the Historical dictionary as well, thus speeding up the work on this important resource.

2.6. *Search engine and virtual keyboard*

The difficulties to produce a proper search engine came from the fact that Old Bulgarian is a language with complicated inflectional morphology especially in the nominal paradigm (six cases plus Vocative, three genders, three grammatical numbers, simple and compound forms of the adjectives and declinable participles), which further was reduced to 2 to 5 forms, depending on grammatical gender. So, it turned out that in order to design and produce a reliable search engine we had to have a tagger (electronic tool that allows for morphological annotation of the inflectable words). And to produce one we needed to create a grammatical dictionary of OCS taking into account all possible representations of a single form. Yet we needed a quick search tool in order to facilitate the work on the historical dictionary and the use of the *Corpus*. The temporary solution came from our main software specialist who digitized the OCS dictionary and developed the software for the Historical dictionary. The search engine is installed in the system and one can search on all its entries (dictionaries, the *Corpus*, and the *Chronograph*) or choose one or more of them. The machine shows the list of the texts, in which the form, we look for, is found and to find it together with the respective context one has to use the browser internal search functionalities. Therefore, one of the main tasks of the ICT company we selected will be to design and install a real search engine that will enable us to search without using browser functionalities and according to different parameters: beginning or the end of the word, letter strings contained within the word, grammatical forms. The virtual keyboard, that might need some fine tuning as well, is also in place.



Търсене в текстовия корпус

Търси за ꙁванїє kbd ☑ Текстов корпус ☐ Хронограф ☑ Исторически речник ☑ Патр. Евтимий речник ☐ Терминологичен речник Търсене

Текстов корпус: намерени документи: 9, за 0.147 сек.

Документ	Заглавие	Контекст	Ранг
doc_167	ПРѢМѪДРАГѠ МАНАСЇА И ЛѢТОПИСЦА СЪБРАНЇЕ	ѕїи же ѿ вины рекошѧ таковыѧ имѣти ꙁванїє. Великыи ирѡє Иракліанин҆, г	6
doc_169	ПРѢМѪДРАГѠ МАНАСЇА И ЛѢТОПИСЦА СЪБРАНЇЕ	а: „Єже въ книгахъ н(е)б(е)с҆ныихъ ꙁванїємъ написаныимъ и на лицихъ цѣ	5
doc_52	Бележки на българските книжовници X-XVII	єще же и мѣрꙋ, въ нѥи же кто на ꙁванїє полоучи. польѕнѣє вѫди смѣрен	3
doc_32	Диалози	именоуеть и инако ми сѧ минтъ проꙁванїє работнаа и ꙁнаменаваема и	2
doc_168	ПРѢМѪДРАГѠ МАНАСЇА И ЛѢТОПИСЦА СЪБРАНЇЕ	євстанъ быс(т҆), ꙗко еллинъ ис(т҆), ꙁванїємъ Исокасїє, саном же кїєстор	2
doc_155	житїе и жиꙁнь прпбныѧ матере нашѧ парас	блгѡгѡвѣнны женъ єѵфимїа тои проꙁванїє , поѵно томꙋже видѣнїꙋ вид	1
doc_156	житїе и жиꙁн(ъ) прпбнагѡ wца нашего і~	бываѥ имъ . лꙋка бѡ сем вѣше проꙁванїє . тѡгѡ ꙋбѡ ꙁрѧ прпбны съ сѡ	1
doc_157	житїе и жиꙁ῾нь прпбнааго wца нашегѡ і	хїепкпꙋ . євстаѳїє же бѣ томꙋ проꙁванїє . и таковаа къ немоу провѣща	1
doc_170	СКАꙀАНІЕ ИꙀЪꙖВЛЮЕННО ГѠ ПИ смене	мыслѣ ἔγκλησις и передалъ черезъ «ꙁванїє», σχῆμα спуталъ съ σκηνή и	1

Исторически речник: намерени речникови статии: 4, за 0.041 сек.

Статия	Заглавна дума	Контекст	Ранг
d_02392	євстатїи	кпоу. євстаѳїє же бѣ томоу проꙁванїє. и таковаа къ немоу пров	1
d_02553	єѵфимиꙗ	гѡвѣннꙑ женъ єѵфимїа тои проꙁванїє, поѵно томоуже видѣнїоу	1
d_11641	амоунъ	сѫщи, — Амоун же вѣше томоу проꙁванїє, — благороднаго кѡрене	1
d_11780	видѣньнъ	гѡвѣнны женъ єѵфимїа тои проꙁванїє, поѵно томꙋже видѣнїꙋ	1

Евтимиев речник: намерени речникови статии: 19, за 0.021 сек.

Статия	Заглавна дума	Контекст	Ранг
d_03953	проꙁъвание	гѡвѣнны женъ єѵфимїа тои проꙁванїє, поѵно томꙋже видѣнїꙋ	3
d_00380	єѵтимиꙗ	гѡвѣнны женъ єѵфимїа тои проꙁванїє, поѵно томꙋже видѣнїꙋ	1
d_00383	євстатиє	пкпꙋ євстаѳїє же бѣ томꙋ проꙁванїє и таковаа къ немоу провѣ	1
d_00598	амоунъ	сѫщи, — Амоун же вѣше томоу проꙁванїє, — благороднаго кѡрене	1
d_00900	видѣньнъ	гѡвѣнны женъ єѵфимїа тои проꙁванїє, поѵно томꙋже видѣнїꙋ	1
d_01397	лоука	лоука бѡ семоу вѣше проꙁванїє ЙР	1
d_02059	благоговѣнньнъ	сѫщи, — Амоун же вѣше томоу проꙁванїє, — благороднаго кѡрене	1
d_02063	благоговѣньнъ	гѡвѣнны женъ єѵфимїа тои проꙁванїє, поѵно томꙋже видѣнїꙋ	1

© Софийски университет „Св. Климент Охридски“ 2011-2019

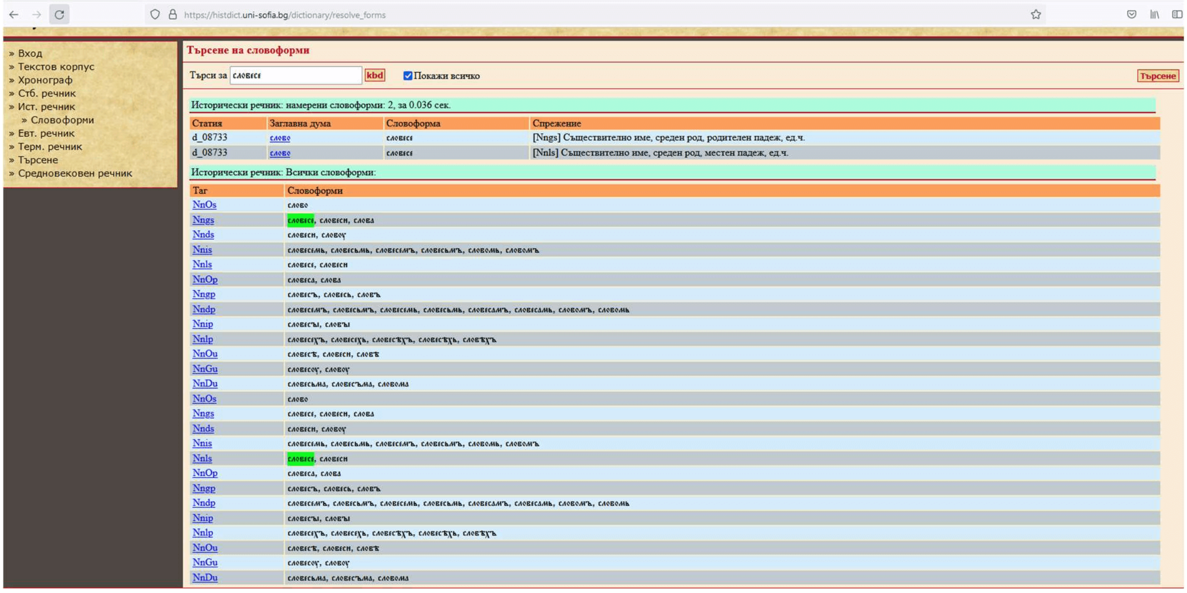
Figure 8: Search engine, *histdict.uni-sofia.bg*

2.7. *Grammatical dictionary and semi-automatic morphological analyzer*

The work on the grammatical dictionary started with compiling the tagset of OCS, which contains 2200 tags and describes the complicated OCS grammar (Totomanova *et al.*, 2015). The tagset was followed by a grammatical dictionary, which includes paradigms of the inflectable words taking into account different phonetic and orthographic variations (Totomanova *et al.*, online). The paradigms (rules) were ascribed to all inflectable words in the historical dictionary and as a final step the grammatical dictionary was installed into it. Now by clicking the sign + located next to the lemma the user can see the whole paradigm of the respective word. Based on that our ICT specialists created a prototype of the morphological annotator, which is also an open access tool on our site.

Yet this is another temporary solution because our goal is however to create an automatic tagger. For this purpose, we are upgrading the grammatical dictionary and editing the grammatical rules. Entering the uninflectable words (adverbs, prepositions, conjunctions, particles, interjections) as well as pronominal forms into grammatical dictionary turned out to be a big challenge. The inclusion of the participial forms seems to represent even a bigger challenge, given the fact that OCS verbs possess 5 participles, out of which four are declinable and have also determined counterparts. We developed rules for automatic generation of the participial paradigms depending on the verb type and so far, have produced the participial forms of the verbs of the first two OCS conjugations (i.e. 894 verbs with over 3 million forms). The grammatical dictionary upgrade made us realize the need to edit the lemmas and the grammatical definitions in the

Historical Dictionary, which seems to turn into a constant process and is also one of the tasks the ICT company is supposed to fulfil.



https://histdict.uni-sofia.bg/dictionary/resolve_forms

- » Вход
- » Текстов корпус
- » Хронограф
- » Стб. речник
- » Ист. речник
  - » Словоформи
- » Евт. речник
- » Терм. речник
- » Търсене
- » Средновековен речник

Търсене на словоформи

Търси за словесе kbd ☑ Покажи всичко Търсене

Исторически речник: намерени словоформи: 2, за 0.036 сек.

Статия	Заглавна дума	Словоформа	Спрежение
d_08733	слово	словесе	[Nngs] Съществително име, среден род, родителен падеж, ед.ч.
d_08733	слово	словесе	[Nnls] Съществително име, среден род, местен падеж, ед.ч.

Исторически речник: Всички словоформи:

Таг	Словоформи
NnOs	слово
Nngs	словесе, словеси, слова
Nnds	словеси, словоу
Nnis	словесемь, словесьмь, словесемъ, словесьмъ, словомь, словомъ
Nnls	словесе, словеси
NnOp	словеса, слова
Nngp	словесъ, словесь, словъ
Nndp	словесемъ, словесьмъ, словесемь, словесьмь, словесамъ, словесамь, словомъ, словомь
Nnip	словесы, словы
Nnlp	словесехъ, словесехь, словесѣхъ, словесѣхь, словѣхъ
NnOu	словесѣ, словеси, словѣ
NnGu	словесоу, словоу
NnDu	словесьма, словесъма, словома
NnOs	слово
Nngs	словесе, словеси, слова
Nnds	словеси, словоу
Nnis	словесемь, словесьмь, словесемъ, словесьмъ, словомь, словомъ
Nnls	словесе, словеси
NnOp	словеса, слова
Nngp	словесъ, словесь, словъ
Nndp	словесемъ, словесьмъ, словесемь, словесьмь, словесамъ, словесамь, словомъ, словомь
Nnip	словесы, словы
Nnlp	словесехъ, словесехь, словесѣхъ, словесѣхь, словѣхъ
NnOu	словесѣ, словеси, словѣ
NnGu	словесоу, словоу
NnDu	словесьма, словесъма, словома

Figure 9: Grammatical dictionary and tagger, *histdict.uni-sofia.bg*

2.8. Old Bulgarian Unicode fonts and converter

For compiling the Corpus and digitizing the Old Bulgarian Dictionary we needed not only the respective software but also specialized Unicode (UTF-8) OCS fonts readable online. To avoid the retyping of already digitally typed texts the new fonts were installed in a converter that allowed for their conversion to the new fonts. Now we use the third version of the converter, which includes 3 specialized fonts with different design *CyrillicaBulgarian10U*, *CyrillicaOchrid10U* and *CyrillicaOldStyleU*. The last one is meant for typing the Early Modern Bulgarian texts. In the beginning we were able to convert only the fonts of the families *Cyrillica Bulgarian*, *Cyrillica Ohrid* and *Cyrillica Shafarik*, developed by Synthesis Soft company and widely spread among the Palæoslavonic research community, to which gradually other OCS and Ancient Greek fonts were added: the Italian *PopRetkov*, Unicode font *BukyVede*, which is also based on Synthesis Soft design, *TimesGreekClassic* and *TimesGreekOld*, also developed by the same company, convert now into *Palatino*, as well as all varieties of the modern font *TimesCyrillic* in *Times New Roman*. Our OCS fonts and the converter spread throughout Europe since they were compatible with the editorial software programs and a series of books and periodicals in both Bulgaria and abroad are using them.

The open access Histdict system is a complex of unique resources and tools for publication and research of medieval Slavonic texts and in a European and global context it corresponds to *Thesaurus Linguæ Græcæ* and *Perseus*, representing the classical written heritage. Compared to them our RI has a big advantage—it is based on the link between the diachronic corpus and the respective dictionaries, that are being elaborated using the lexical material form the corpus.

3. Conclusions: future plans and development

The main objective of RI is to maintain, develop and upgrade the electronic research resources and tools through the creation of new functionalities and research capabilities. The following activities are envisaged:

- Complementing the corpus with new texts in order to collect all Bulgarian written heritage in digital format

- Creating a parallel corpus with translations into Modern Bulgarian language so that the works of Old Bulgarian writers will be accessible to the general public as well
- Continuous updating of the historical dictionary
- Creating synchronous electronic dictionaries on medieval texts
- Maintaining and upgrading the existing software
- Research
- Training of doctoral and postdoctoral students and young scholars
- Publishing: research and publications of texts and dictionaries

On June 30th, 2021, the ESFRI Forum included RESILIENCE in the Research Infrastructure Roadmap 2021. This means that RESILIENCE will take its place in the strategic Research Infrastructures for the European Research Area and that it can work on the further development of the Research Infrastructure for Religious Studies. Therefore, the situation now is different. As a part of RESILIENCE we will expand the circle of potential users of our digital resources including also the learning platform E-Medievalia with its courses in Old Church Slavonic. But the most important result of our participation in RESILIENCE opens for us new horizons and provides the great opportunity to include the cultural heritage of South-eastern Europe related to the Christianity into European research exchange. At the same time, it represents another big challenge for us. And to face this challenge decently we are looking for new partners...

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