

Classification scheme OSNO used in institutional repositories at Western Balkan Universities

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Abstract

Since the institutional repository of the University of Belgrade in Serbia has been designed for archiving digital objects in all fields of science, the need for single classification scheme has emerged. In the frame of Tempus project "New library services at Western Balkan Universities" (2010-2013) classification system OSNO (General Scheme of Scientific Fields) has been developed in University library "Svetozar Markovic" in Belgrade and incorporated in the institutional repository of the University of Belgrade PHAIDRA BG, as well as in institutional repositories of the University of Kragujevac and Nis, also in neighboring countries: Montenegro (the University of Podgorica) and Bosnia and Herzegovina (the University of Sarajevo and Tuzla). The scheme is addition to the initial application based on PHAIDRA system developed at the University of Vienna. Classification scheme OSNO is mandatory for scientific objects because it enables comprehensive information retrieval. A general scheme of sciences and scientific areas presented in natural language has been developed in order to make entry of contents descriptions of scientific documents easier for users. At the moment librarians are uploading documents, mostly doctoral theses into institutional repositories. OSNO is user-oriented scheme, designed upon the notion that it will be used not only by librarians but by researchers as well.

This paper presents classification scheme OSNO developed as addition to initial application PHAIDRA BG and information retrieval system which uses specific scientific areas as search criteria from a drop-down menu.

Keywords: OSNO (General Scheme of Scientific Fields), University library "Svetozar Markovic" in Belgrade, classification scheme, institutional repository, PHAIDRA

In the frame of Tempus project "New library services at Western Balkan Universities" (2010-2013) institutional repositories were established at six universities in the region. University library "Svetozar Markovic" coordinated the project and first institutional repository was established at the University of Belgrade. Since it has been designed for archiving digital objects in all fields of science, the need for single classification scheme has emerged in order to provide easier and more accurate access to digital materials for users. Classification system OSNO (General Scheme of Scientific Fields) has been developed in University library "Svetozar Markovic" in Belgrade and incorporated in the institutional repository of the University of Belgrade PHAIDRA BG, as well as in institutional repositories of the University of Kragujevac and Nis, and also in institutional repositories in neighboring countries: Montenegro (the University of Podgorica) and Bosnia and Herzegovina (the University of Sarajevo and Tuzla). The scheme presented in natural language (Serbian) is addition to the initial application based on PHAIDRA system developed at the University of Vienna.

According to Serbian library law, Universal Decimal Classification (UDC) is being used in cataloging of all library materials (currently, version 2004). Consequently it is being used for indexing of scientific documents in the catalogues of academic libraries. Hence, the most logical choice of classification system for the Phaidra repository would also be UDC, but it was not completely suitable due to some weaknesses: certain groups were too far apart; hierarchical relations were not set up in accordance with organisational scheme of the faculties of the University of Belgrade and with outline of science and of academic disciplines in other classification systems (e. g. LCC, UNESCO classification); although there are detailed class descriptions, deeper indexing requires complicated notation with two or more UDC numbers in correlation, often including auxiliary numbers, wherefore the document can't be unambiguously indexed and communication between users and a classification code is difficult.

Due to the aforementioned reasons, apart from UDC and single classification scheme which was formerly used in University library "Svetozar Markovic", in process of creating OSNO other classification systems were consulted:

- RVK (Regensburger Verbundklassifikation)
- ÖFOS (Österreichische Systematik der Wissenschaftszweige)

RVK Regensburger Verbundklassifikation

The Regensburger Verbundklassifikation (RVK) is a classification scheme for academic libraries. In the 1960s the University of Regensburg Library developed the RVK as an in-house classification scheme for its own extensive holdings on the open shelves. Since then the RVK evolved step by step into a classification which is currently developed cooperatively by a network of 130 academic libraries and institutions in Germany, Austria, Italy and Switzerland. The University of Regensburg Library maintains the RVK as a tool for the organization of knowledge with regard to its technical and organisational requirements.¹

¹ <https://rvk.uni-regensburg.de/2-uncategorised/141-rvk> (retrieved on April 24, 2018)

ÖFOS (Österreichische Systematik der Wissenschaftszweige)

Austrian version of international UNESCO systematic FOS (Fields of Science and Technology) - ÖFOS (Österreichische Systematik der Wissenschaftszweige) was also consulted, especially in the field of biosciences, as well as in the field of agriculture and related sciences.

UDC summary example²

62

Engineering. Technology in general

62-1/-9

Special auxiliary subdivision for technology in general

621

Mechanical engineering in general. Nuclear technology. Electrical engineering. Machinery

621.1

Heat engines in general. Generation, distribution and use of steam. Steam engines. Boilers

621.22

Hydraulic energy. Water power. Hydraulic machinery
Including: Water wheels. Water turbines

621.3

Electrical engineering

621.4

Heat engines (except steam engines)

621.5

Pneumatic energy, machinery and tools. Refrigeration
Including: Compression and rarefaction equipment. Wind power machines (wind turbines, windmills etc). Refrigeration technology. Production of low temperatures (cryogenics)

621.6

Fluids handling, storage and distribution plant and techniques
Including: Air movers (fans, extractors). Conduits (pipelines). Flow regulators. Pumps and pumping

621.7

Mechanical technology in general: processes, tools, machines, equipment
Including: Tool making. Forging. Foundry work. Smelting. Plastic forming (of metals). Welding. Packing and packaging equipment

621.8

Machine elements. Motive power engineering. Materials handling. Fixings. Lubrication
Including: Bearings. Couplings. Transmissions. Gears. Clutches. Fixings (screws, bolts, nails etc). Lubrication. Hoists. Conveyors. Stackers. Fork-lifts. Cranes. Transporters. Lifts. Escalators. Levellers. Excavators. Dredgers

² <http://www.udcsummary.info/php/index.php?tag=6&lang=en> (retrieved on April 24, 2018)

621.9

Working or machining with chip formation. Abrasive working. Hammers and presses
Including: Cutting. Grinding. Sheet working. Thread-forming. Mills. Lathes and lathe work

From UDC example can be seen that the field of electrical engineering is positioned between two kinds of heat engines and next to hydraulic energy and machinery.

In RVK heat electrical engineering is ordered apart from mechanical engineering and engines are assigned in section [ZL 5000 - ZL 5950](#) (subclassification of mechanical engineering).

RVK example

[ZG - ZS](#) Technik

[ZG](#) Technik allgemein

[ZH](#) Architektur

Verw.: Architektur in künstlerischer Hinsicht s. [LH 67000](#) ff.

[ZI](#) Bauingenieurwesen

[ZK](#) Bergbau und Hüttenwesen

[ZL](#) Maschinenbau

Reg.: [Maschinenbau](#)

[ZM](#) Werkstoffwissenschaften und Fertigungstechnik

[ZN](#) Elektrotechnik, Elektronik, Nachrichtentechnik

[ZO](#) Verkehr, Transport

[ZP](#) Energietechnik

[ZQ](#) Automatisierungstechnik, Mechatronik

[ZS](#) Handwerk und Gewerbe. Verschiedene Technologien

Verw.: Wirtschaftliche Aspekte s. QR

[ZG - ZS](#) Technik

[ZL](#) **Maschinenbau**

Reg.: [Maschinenbau](#)

ZL 0001 Zeitschriften

Bem.: Erläuterungen zur Notationsvergabe s. RVK-Online - Nutzungshinweise

ZL 1000 Fortschrittsberichte und Referateorgane

Bem.: Erläuterungen zur Notationsvergabe s. unter RVK Online - Nutzungshinweise

[ZL 1100 - ZL 2200](#) Bibliographien, Sammelschriften, Biographien

[ZL 2250 - ZL 2650](#) Nachschlagewerke

[ZL 2700 - ZL 2750](#) Ausbildung, Beruf, Forschung

ZL 2800 Beziehungen zu anderen Fachgebieten

[ZL 3000 - ZL 3180](#) Maschinenbau allgemein

[ZL 3200 - ZL 3268](#) Maschinenkonstruktion

[ZL 3300 - ZL 3700](#) Betrieb, Sicherheit, Wartung und Reparatur von Maschinen

[ZL 3750 - ZL 3800](#) Tribologie
Reg.: [Tribologie](#)

[ZL 3900 - ZL 3950](#) Behälter

[ZL 4000 - ZL 4700](#) Maschinenelemente

[ZL 5000 - ZL 5950](#) **Kraft- und Arbeitsmaschinen**

[ZL 6000 - ZL 6400](#) Werkzeugmaschinen

[ZL 7100 - ZL 7800](#) Spezielle Arbeitsmaschinen
Bem.: Heizungs-, Lüftungs- und Klimatechnik s. [ZL 8600](#) ff. Landwirtschaftliche Maschinen, Landtechnik
s. [ZD 7000](#) ff.

In ÖFOS electrical engineering is ordered before mechanical engineering:

ÖFOS example

TECHNISCHE WISSENSCHAFTEN³

Code	Titel
201	Bauwesen
202	Elektrotechnik, Elektronik, Informationstechnik
203	Maschinenbau
204	Chemische Verfahrenstechnik
205	Werkstofftechnik
206	Medizintechnik

³ http://www.statistik.at/KDBWeb/kdb_KindelementeAnzeigen.do?KDBtoken=null&sprache=1DE&elementID=9911003
(retrieved on May 6, 2018)

207	Umweltingenieurwesen, Angewandte Geowissenschaften
208	Umweltbiotechnologie
209	Industrielle Biotechnologie
210	Nanotechnologie
211	Andere Technische Wissenschaften

OSNO example

3401	Mašinstvo
340100	Enciklopedije. Leksikoni. Rečnici. Bibliografije
340101	Biografije
340102	Istorija mašinstva
340103	Metodika nastave. Udžbenici
340104	Mašinske konstrukcije
340104A	Tribologija. Maziva
340105	Mašinski elementi
340106	Mašine, alatke
340107	Obrada materijala
340107A	Plastična obrada
340107B	Obrada rezanjem
340107C	Termička obrada
340107D	Metalurgija praha. Sinterovanje
340107E	Zaštitne prevlake
340108	Termotehnika. Motori. Hidraulika
340108A	Parne mašine. Parni kotlovi
340108B	Motori sa unutrašnjim sagorevanjem
340108C	Vodne turbine. Hidraulične mašine
340109	Privredno mašinstvo
340109A	Pneumatski uređaji. Kompresori. Rashladna tehnika
340109B	Transportni uređaji. Mašine za zemljane radove
340110	Mehatronika
340111	Ostala pitanja
3402	Elektrotehnika

From the table above can be seen that in OSNO the field of electrical engineering is ordered after mechanical engineering, but the sequence of subclassification of mechanical engineering resembles the one in UDC. There are similar examples in other fields of science.

Classification scheme OSNO has over 1700 classes and subclasses. At the time of writing, 4056 objects in institutional repository of the University of Belgrade PHAIDRA BG were indexed by OSNO.

In PHAIDRA objects can be classified using EuroVoc or OSNO. EuroVoc is a multilingual, multidisciplinary thesaurus covering the activities of the EU. It contains terms in 23 EU languages⁴, but it doesn't completely meet the needs of institutional repositories of the universities. Classification scheme OSNO is mandatory⁵ for scientific objects because it enables comprehensive information retrieval.

Here is the example for information retrieval system using specific scientific area as a search criterion from a drop-down menu.



Picture above shows query results for "Parne mašine. Parni kotlovi" (meaning "Steam engines. Boilers") in Institutional repository of the University of Belgrade.

In Serbia OSNO has also been incorporated in institutional repositories of the University of Kragujevac and Nis. In Kragujevac it is being used for classification of scientific papers but not in a considerable number. In Nis both doctoral dissertations and papers are indexed by OSNO.

Classification system OSNO has been incorporated in institutional repositories of universities in neighboring countries, the University of Podgorica in Montenegro and the universities in Bosnia and Herzegovina (Sarajevo and Tuzla). Some slight changes in language are included and some adequate subclasses are introduced for local needs.

⁴ <http://eurovoc.europa.eu/drupal/>

⁵ word mandatory is used here to underline the importance of classification, but objects can be uploaded without filling in the field for classification

Next example shows the difference in classification scheme in Institutional repository of the University in Podgorica compared with OSNO in PHAIDRA BG.

Comparison between subclasses of subdivision of History in OSNO: Istorija pojedinih Evropskih država i naroda ("History of European states and peoples") in institutional repositories in Belgrade and in Podgorica:

	PHAIDRA BG		PHAIDRA ME
14	Istorijske nauke	14	Istorijske nauke
1415	Istorija pojedinih Evropskih država i naroda	1415	Istorija pojedinih Evropskih država i naroda
141500	Vizantija	141500	Crna Gora
141501	Balkan	141501	Balkan
141502	Istorija Slovena	141502	Istorija Slovena
141503	Istorija južnoslovenskih naroda	141503	Istorija Srba
141504	Jugoslavija	141504	Jugoslavija
141505	Srbija	141505	Srbija
		141506	Istorija Crnogoraca

There is one subfield more in OSNO used in Podgorica, subclass "Crna Gora" (meaning "Montenegro") was implemented and some other changes were made.

The screenshot shows the PHAIDRA search interface. The header includes the PHAIDRA logo and the UCG logo. Below the header, there are search filters and a search bar. The main content area displays search results for 'Istorija pojedinih evropskih država i naroda'. The results are filtered by '14: Istorijske nauke' and '141500: Crna Gora'. A red pencil icon is visible next to the search results, indicating a filter or edit function. The footer contains contact information for the University of Crna Gora.

OSNO has also been incorporated in Phaidra of the University of Sarajevo, but at the time of writing the database was not available due to some technical problems. After TEMPUS project was completed institutional repository of the University of Banja Luka in Bosnia and Herzegovina has been established (2016–2017) and OSNO is being used for classification of master thesis, although not in substantial number.

Conclusion

Based on aforementioned observations, it can be concluded that OSNO is used to the full extent in institutional repository of the University of Belgrade for uploading doctoral dissertations. It is also considerably in use at the University of Nis. In University library in Podgorica majority of doctoral dissertations are classified by OSNO. At the moment librarians are uploading documents into institutional repositories, number of self-archived objects is very small. A general scheme of sciences and scientific areas presented in natural language has been developed in order to make entry of contents descriptions of scientific documents easier for users. OSNO is user-oriented scheme, designed upon the notion that it will be used not only by librarians but by researchers as well. Since institutional repositories are becoming important part of scientific research, hopefully self-archiving will increase and it will be used in greater extent in the future.

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