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## **Integrace VŠKP do Univerzitního repozitáře TUL**

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# INTEGRATION OF UNIVERSITY QUALIFICATION THESES INTO THE TUL REPOSITORY

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## **Abstract**

The paper maps the process of building and putting into operation the university repository of the Technical University of Liberec (TUL). It also briefly discusses the situation that preceded the commissioning of the repository and the original options for storing and making qualification theses available. The creation of the repository is seen from the point of view of the direct participants in the process, and this paper is therefore a summary of practical experience and examples of good practice, yet does not avoid demonstrations of failed attempts. The paper also describes the current state of the active processes of the repository and a brief plan for its further development and improvement.

## **Keywords**

University repository, digital repository, DSpace, archiving, electronic resources, university qualification theses

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## **Introduction**

The TUL institutional repository currently serves more than 8,000 students and 3,000 teaching staff. It is also open to the general public, either without registration or using a Shibboleth login.

The original idea of an internal repository originated at the TUL university library in 2004 and was motivated by the necessity to digitise and subsequently safely archive university qualification theses (hereinafter referred to as “theses”). The need to archive the publishing activities of TUL authors and for a reliable repository in connection with the entering of DOI for selected publications and articles turned out to be a secondary reason.

## **Creating the Repository**

As early as 2012, there was an intention to build an institutional repository under the new Concept of Management and Development of the University Library of the Technical University of Liberec in the medium term of 3 years. The EPrints and DSpace systems were considered. The DSpace system was chosen because of its greater presence and support in the Czech Republic, and was first installed as version 2.0 in 2013.

Data testing was performed for one year. Seminar papers from the former Faculty of Textile Engineering of TUL in Prostějov were entered individually. Theses had been registered in the Verbis library system (including full text) since 2006. Their data were tested during bulk imports. The content structure was originally divided among the individual faculties, which were offered their own space in the repository. Later, for practical reasons, the structure was reversed and the basic division is now by document type.

**TECHNICKÁ UNIVERZITA V LIBERCI**  
www.tul.cz

Domovská stránka DSpace

## Repozitář DSpace

Repozitář je elektronická služba pro sběr, uchování a zprostředkovávání elektronických materiálů. Repozitáře jsou důležitými nástroji pro zachování odkazu organizace; usnadňují elektronické uchování a akademickou komunikaci.

## Komunity v DSpace

Vyberte komunitu k procházení jejích kolekcí.

### Publikační činnost

#### Vysokoškolské kvalifikační práce

1. Fakulta strojní
2. Fakulta textilní
3. Fakulta přírodovědně-humanitní a pedagogické vědy
4. Ekonomická fakulta
5. Fakulta umění a architektury
6. Fakulta mechatroniky, informatiky a mezioborových studií
7. Ústav zdravotnických studií
8. Ústav pro nanomateriály, pokročilé technologie

## Repozitář DSpace 6.3

DSpace je elektronická služba pro sběr, uchování a zprostředkovávání elektronických materiálů. Repozitáře jsou důležitými nástroji pro zachování odkazu organizace; usnadňují elektronické uchování a akademickou komunikaci.

## Komunity v DSpace

Vyberte komunitu k procházení jejích kolekcí.

- Archivované dokumenty TUL
- Casopisy
- Oceněné závěrečné práce
- Publikační činnost
- Vysokoškolské práce
- Výukové materiály
- Výzkumné a technické zprávy

## Nedávno přidané

Cardioneuroablation in a patient with atrioventricular nodal re-entrant tachycardia  
Roubíček, Tomáš; Wichterle, Dan; Kautzner, Josef (OXFORD UNIV PRESS, GREAT CLARENDON ST, OXFORD, OX2 6DP, ENGLAND, 2018-12)  
We present the case of a 32-year-old female patient with a history of chronic fatigue resulting from functional disorder of the sinoatrial (SA) and atrioventricular (AV) nodes, in addition to palpitations due to paroxysmal ...

Thermal insulation and thermal contact properties of wool and wool/PES fabrics in wet state  
Akcagun, Engin; Boguslawska-Baczek, Monika; Hes, Luboš (TAYLOR & FRANCIS INC, 530 WALNUT STREET, STE 850, PHILADELPHIA, PA 19106 USA, 2019-02-17)  
The most important parameters characterizing thermal comfort of special garments are thermal resistance and water vapor permeability. Contrary to common textiles, protective garments are often used in wet state, which ...

Characterization and antibacterial property of Kapok fibers treated with chitosan/AgCl-TiO2 colloid  
Hai, Abdul Moqet; Ahmed, Mehboob; Afzal, Ali; Jabbar, Abdul; Faheem, Sajid (TAYLOR & FRANCIS LTD, 2-4 PARK SQUARE, MILTON PARK, ABINGDON OX14 4RN, OXON, ENGLAND, 2019-01-02)  
The aim of this research is to investigate the antibacterial activity of Kapok fibers modified with AgCl/TiO2 and Chitosan colloid. A very simple, single-step (pad-dry-cure) method was used for the application of AgCl/TiO2 ...

**Prohledat DSpace**

**Vykonat** Rozšířené hledání

**Procházet**

Vše v DSpace  
komunity a kolekce  
dle data publikování  
autoři  
klíčová slova

**Můj účet**

Přihlásit se  
Zaregistrovat se

**Prohlíženi**

**Autor**

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- Bakalova Totka (84)
- ... zobrazit další

**Klíčové slovo**

- education (375)
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- marketing (251)
- family (247)
- dotazník (235)
- volný čas (219)
- kommunikace (218)
- communication (208)
- design (201)
- analysis (195)
- ... zobrazit další

Figure 1: Change of content structure

Another opportunity to test DSpace came with a contract to digitize the Speciální pedagogika (Special Education) journal and its earlier mutations, including the installation of a DSpace repository: <http://dspace.specpeda.cz/>. Here again, the university library staff tested the metadata as selection data.

In 2014, the TUL repository acquired a public domain: <https://dspace.tul.cz/> and the last update to version 6.3 took place in 2018. With each new release, developers have improved the functionality and modifiability of the repository, so our goal is to have the latest supported version as it continues to evolve.

## History of the Digitization of and Access to Theses

Until 2006, the TUL university library provided access to a thesis study room, where users were able to view and study physical specimens from the previous five years (other theses were provided from storage upon request).

The first wave of their digitization began in 2005 and was carried out in the library digitization centre by scanning. The most recent theses were digitized first, and the process continued back to the early 1990s. Those theses were the most popular among users, and the physical specimens were in hardcover form that allowed scanning on Elsynt scanners. The images were edited in the Atlas software into the resulting PDF format.

The second wave of digitization took place between 2008 and 2011. Theses from the entire history of the university were processed, i.e. from 1956 to the 1990s. The bindings of these theses were predominantly screwed together, and this complicated imaging. Hence the bound specimens had to be carefully cut open before scanning to ensure the subsequent scanning would be completely free of defects. For faster processing, imaging took place on a Canon scanner and images were processed in Capture Perfect - again into the resulting PDF files. Almost every thesis required individual settings depending on paper type and print strength. At the end of this period, the library could declare all the theses from 1956 to 2005 digitized. Since 2006, theses texts have also been submitted on compact discs in addition to print copies, and so the full texts were entered into the library system using those CDs.



Figure 2: Digitization workplace

The gradually digitized theses were uploaded to the server, which was connected to six computers through which users could view the full texts. The computers were not connected to the Internet, had no keyboards (mouse inputs only) and had covered USB ports. The theses were thus protected against dissemination.

In 2010, the library switched from the Daimon library system to KPWinSQL (now Verbis). From 2011, full texts and metadata were downloaded from the Study Information System (STAG) to Verbis via web services.

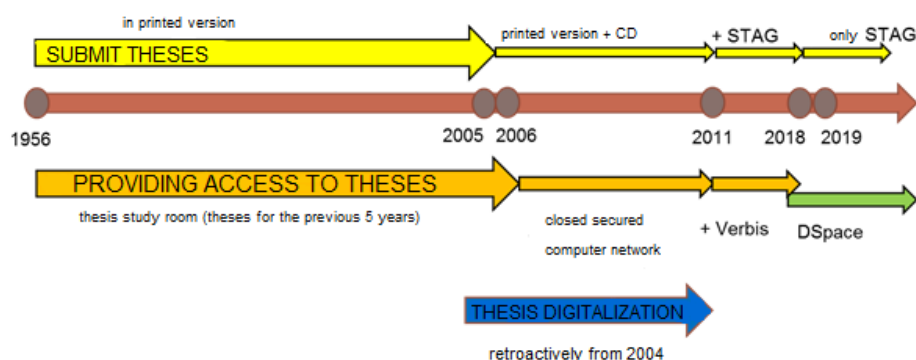


Figure 3: Submission, accessing and digitization of theses over time

After DSpace was installed, a batch import of the theses data from the Verbis library system was performed. Only metadata were imported into DSpace, and digitized full texts of the theses had to be entered manually. All the library employees participated in this work.

In 2015, the first-ever shredding of theses more than twenty years old took place (according to the valid TUL Document Rules). This was preceded by manual checking of all the PDF files, their conversion to PDF/A, their saving onto external disks and their backup onto UDO disks. 11,773 theses from the 1956-1995 period were shredded in total.

## The Digitization of and Access to Theses – Present

Last year, i.e. 2018, the submission of theses to the TUL university library in paper form was cancelled and the DSpace repository is now linked to STAG. The thesis texts, their attachments, opinions and defence records are exported via an API and web services directly to DSpace. The individual metadata from STAG are mapped into the Dublin Core format in DSpace, where they remain unchanged. The full texts are imported into DSpace and only their links are available in STAG. The metadata are subsequently transferred, again via web services, from DSpace to Verbis (converted to MARC21 from the Dublin Core data format), where the metadata are modified in line with library standards. All the theses are searchable both in DSpace and in the online Portaro catalogue, where there are links to the full texts in DSpace.

CITATION		DETAIL	MARC
Field name	Field content		
Title statement	Korálová nanovláčna = Beaded nanofibers /		
Main entry--personal name	Havlíčková, Veronika		
Added entry--personal name	Chaloupek, Jiří		
Added entry--corporate name	Technická univerzita v Liberci. Textilní fakulta		
Subject added entry--topical term	elektrostatické zvlákňování		
Subject added entry--topical term	nanomateriály		
Subject added entry--topical term	nanotechnologie		
Subject added entry--topical term	textilní materiály		
Třídění (anglická kl. slova)	textile materials		
Třídění (anglická kl. slova)	nanotechnology		
Třídění (anglická kl. slova)	electrospinning		
Třídění (anglická kl. slova)	nanomaterials		
Index term--genre/form	bakalářské práce		
Publication, distribution, etc.	Liberec : Technická univerzita, 2011		
Physical description	53 s., 46 s., příl. : obr., tab. grafy + CD ROM		
Summary, etc.	Bakalářská práce se zabývá problematikou výroby korálových nanovláken a seznamuje čtenáře s procesem výroby a klíčovými faktory, které ovlivňují jejich tvorbu. Zaměřuje se na vliv změn tří parametrů, a to: koncentrace roztoku, elektrické napětí a vzdálenost kolektoru a kapiláry. Naměřené hodnoty porovnává s teoretickými předpoklady a obsahuje návrh nejvhodnějšího roztoku ze zkoumaných vzorků pro přípravu korálových vláken.		
Katedra	KTM		
Electronic location and access	<a href="http://knihovna-opac.tul.cz/diplomovaPrace.php?id_dipl=20899">http://knihovna-opac.tul.cz/diplomovaPrace.php?id_dipl=20899</a> 5 MB pdf Plný text práce		
Posudek oponenta	<a href="http://knihovna-opac.tul.cz/diplomovaPrace.php?id_dipl=20899&amp;typ=1">http://knihovna-opac.tul.cz/diplomovaPrace.php?id_dipl=20899&amp;typ=1</a> 1 MB jpg Posudek oponenta		
Posudek vedoucího práce	<a href="http://knihovna-opac.tul.cz/diplomovaPrace.php?id_dipl=20899&amp;typ=2">http://knihovna-opac.tul.cz/diplomovaPrace.php?id_dipl=20899&amp;typ=2</a> 1 MB jpg Posudek vedoucího práce		
Výsledek obhajoby	<a href="http://knihovna-opac.tul.cz/diplomovaPrace.php?id_dipl=20899&amp;typ=3">http://knihovna-opac.tul.cz/diplomovaPrace.php?id_dipl=20899&amp;typ=3</a> 41 kB pdf Obhajoba práce		

Figure 4: Links to files stored in DSpace in the thesis record in the online Portaro catalogue

All the theses are now freely accessible, with the exceptions approved pursuant to Section 47b(4) of the Higher Education Act, amending and supplementing other Acts.

## Conclusion and Challenges

There are a number of ways the repository can be improved, and we have selected the following areas for the coming period.

### Unique Personal Identifiers

To date, there is no system of unique author identities in the university system. Some authors (an estimated 20 percent of publishing authors) have at least an ORCID or ResearcherID. However, these identifiers are only the personal choice of the authors, i.e. they are dependent purely on their willingness to set up and use them.

At TUL, there are a number of information systems that work with personal identifiers: the already mentioned STAG, the personnel system and the accounting system. Unfortunately, not all authority types (students, employees, external staff, doctoral students) are included in any of them. Recognizing the need for unique personal identifiers, the library itself has an ID collection system that allows it to distinguish between individual authors. Only time will tell

whether this system will only be used for library purposes or will be adopted and used throughout the university.

### **Synchronization of Subject Word Entries**

Another area we want to improve is the currently neglected field of subject word entries. So far, only the subject word entries that the author of the work chose and entered into the system have been recorded for theses. Now we would like to align these subject word entries with those of the Verbis library system and implement these enriched entries back into the repository.

We expect this to improve document retrieval and the user-friendliness of the system.

### **Statistics**

Another of our goals is to implement Google Analytics and Altmetric statistics. However, we are currently hampered by repository configuration that does not allow the rendering of the altmetric badge HTML code.

This is also related to the role of the external system developer, who must be contacted and tasked in such cases, thus slowing down the entire innovation process. We are therefore excited about DSpace 7.0 which, according to the first reports, should provide us with more room for personalized system modifications we could perform on our own and in a shorter timeframe.

### **Data Checking in STAG**

There are occasionally unpleasant situations when a file downloaded from STAG to DSpace cannot be opened or is corrupt. Incorporating automated data checking would certainly be beneficial.

### **Publishing Activities**

Since 2015, the reporting of publishing activities to the Information Register of R&D Results (RIV) is through the system <https://publikace.tul.cz/>, developed at TUL. In 2018, a one-time import of data from this system took place through the institutional “Automation of archiving scientific and research data” project. Community updates to the publication activity in DSpace are currently manual, based on alerts from the Web of Science and SCOPUS citation databases. TUL is not interested in archiving the full texts of publishing activities. Nevertheless, DSpace is ready.





Figure 5: The “publikace.tul.cz system” interface (the interface is not available in English).

At present, the repository is still primarily a part of the TUL university library. It is only used by individuals or some departments and institutes, but does not yet serve as generally accepted support for science and research at TUL. Rather, it is perceived as a mere repository, a sort of organized virtual catacomb of interest only to individuals searching for full texts of theses. The question of why this is the case is not easy to answer. The library itself is responsible for actively distributing the repository content to a wider audience.

We need to choose a functional strategy to attract more authors for publishing and subsequent archiving. We believe that the integration of the DSpace repository with other university information systems will take place, see Figure 6.

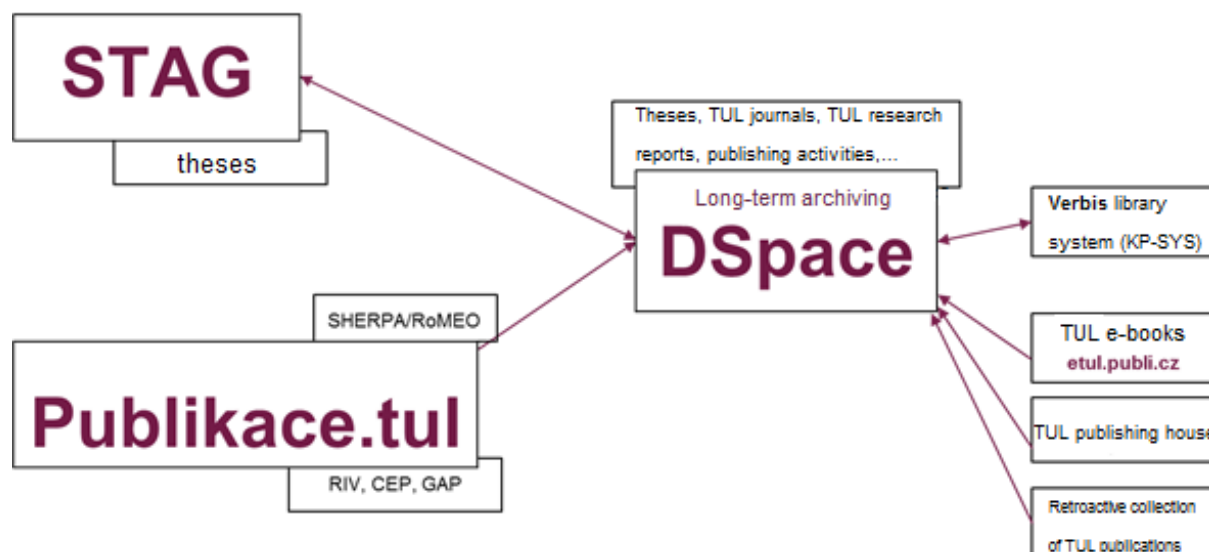


Figure 6: Integration of the DSpace repository with other TUL information systems

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