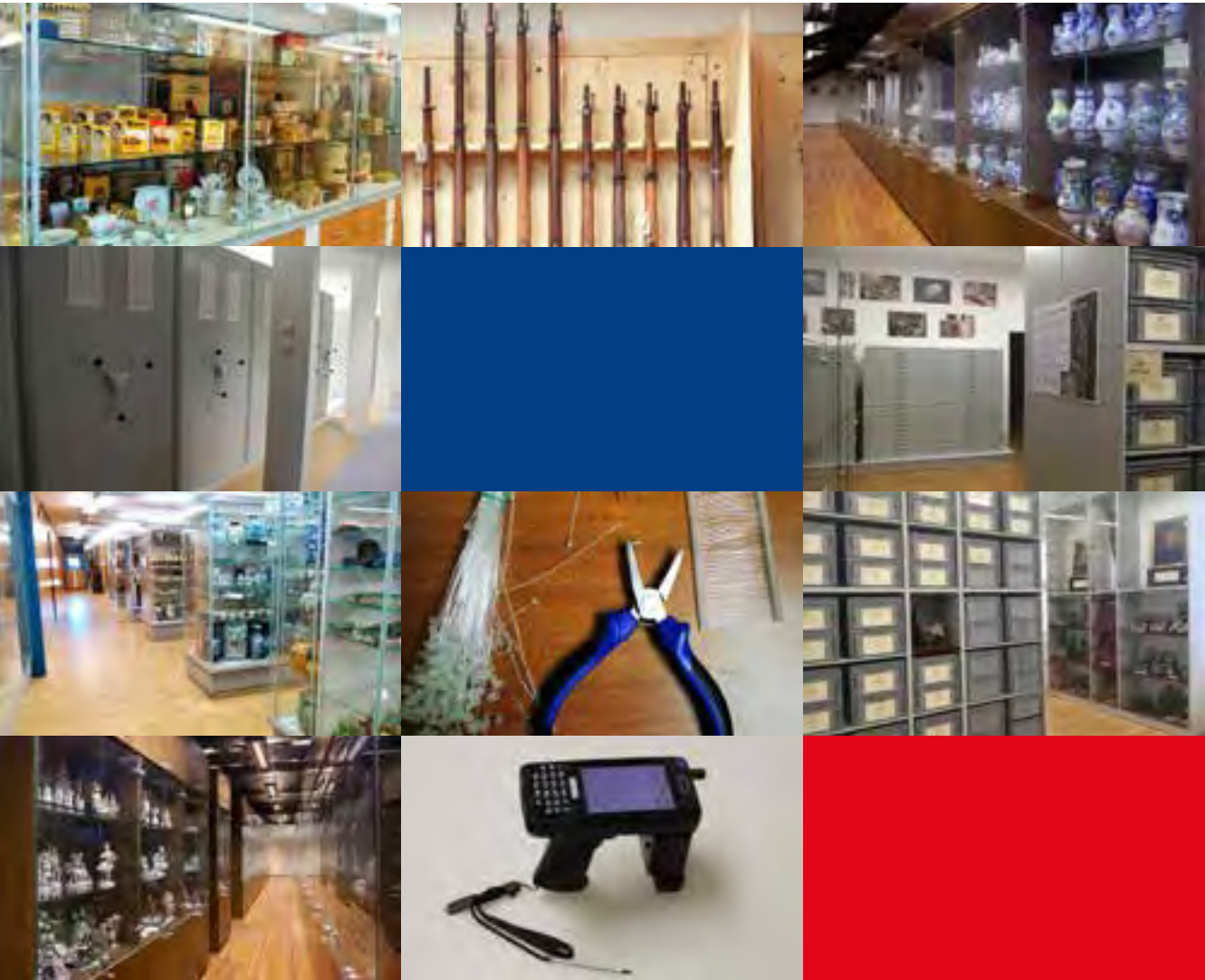# Museum depository modernisation and conditions for their opening to the broader public

PROCEEDINGS OF THE INTERNATIONAL ONLINE CONFERENCE
23–24 MARCH 2021

Museum depository modernisation and conditions for their opening to the broader public

PROCEEDINGS OF THE INTERNATIONAL ONLINE CONFERENCE
23–24 MARCH 2021

The conference was carried out in cooperation with
the Museum of the Slovak National Uprising in Banská Bystrica
and the Department of Ethnography
and Museology of the Faculty of Philosophy of the Comenius University in Bratislava

The conference was an introductory event to the „Open Depository" project,
supported by EEA Grants and the state budget of the Slovak Republic.

The conference took place online. The official languages were Slovak and English.

Contents

As for Introduction

PhDr. Marian Uhrin, PhD.

Director of the Museum of the Slovak National Uprising

One of the main tasks of a museum is, among other things, to take care of objects and their presentation. Nowadays, the technological conveniences offer museums and museum staff new opportunities, both in the protection and presentation of collection items. Naturally, there are several possible directions in the approach to protection and presentation. It is up to the museums to choose the approach within their needs and possibilities.

Museum of the Slovak National Uprising *[hereinafter referred to as the "SNU Museum"]* in Banská Bystrica has chosen the path of an open collection storage. As part of a project funded by the EEA Grants, it has established cooperation with *The Narvik War and Peace Centre* in the Norwegian city of Narvik.

Within the Open Depository[1] project the SNU Museum seek to create new, modern, efficient and practical premises for its collection fund. Moreover, the new way of storing collections in an open storage presents a significant opportunity for their presentation to the visitor. Part of the project is a presentation of the work of the conservation workshop, and nowadays a very important aspect of a museum's work – education. Thus, the educational process in the Museum of the Slovak National Uprising will be directly connected with the presentation activities of the collection fund.

The Open Depository project received a grant from Iceland, Liechtenstein and Norway in the amount of EUR 849,452.45 through EEA Grants. The project has been co-financed in the amount of EUR 149,903.55 from the state

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1   For the purpose of this project, we use the terms "open depository" and "open collection storage" interchangeably within this conference proceedings.

budget of the Slovak Republic. The aim of the project is to make the collection of the SNU Museum accessible to the public in a unique, more attractive form with a new construction and technological design. The project also included an international conference in March 2021 with contributions on the issue of storing and presenting collections in our museums. The two-day-long conference brought, in addition to the official presentation of the project, 13 interesting contributions and a valuable discussion on the issue. These proceedings are one of the outputs of the conference. We believe that it will be beneficial for all those interested in new trends that can, and perhaps already are, bringing benefits to the work of museums in Slovakia and Europe.

Thanks are due to all current and former employees of the Museum of the Slovak National Uprising who have contributed to the implementation of the Open Depository project.

Non-Interpretative Access to Collections
Introduction to the issue

Jan Dolák

Comenius University in Bratislava

"Make things different!", one can hear from every corner as a fundamental imperative, a basic requirement of an endless deconstruction of all present values. On the other hand, stagnation avoidance, creativity, seeking truly new approaches is the elementary "engine fuel" of the required changes. But which of the things the museums do is actually the desired change, the "engine fuel", and which is just a desperate and barren change at all costs? Which trends in museum thesauration and presentation are evolving, and which are not? This brings us to an understanding of the final product of museums, the interpretation of their collections, which in most cases is an interpretation of a fact from the past. However, museums sometimes try other ways of making their collections accessible, with more or less success. Therefore, I consider it appropriate to address these issues in the field of general museological approaches. First, I will present various ways of non-interpretive access to collections on specific examples with appropriate analysis. After that, this paper will deal with the more general problems of museum documentation and presentation. Finally, I will try to analyse very specific, rather thesaurational, issues related to the storage and registration of the collection.

When should and does the presentation of collection objects without display cases, texts and context with a background, make sense? It can be a simple introduction of the visitor, for example a researcher, to the depository, although not in all cases. No generally valid regulation prohibits entry into depositories, and museums quite often use this in non-standard cases, such as for special

visits or excursions by students[1]. To a limited extent, we sometimes show depositories on International Museum Day and other special occasions. These practices are neither new nor rare, both at home and abroad. However, in the museum's analysis of non-interpretative access to collections, we are concerned with something else, namely regular access.

Many museum visitors are interested in a "look inside" into the hidden corners of museum's facilities. The Tyrrell Museum in Alberta, Canada, solved this form of presentation of its work very well – the view from the exhibition to large conservation workshops, where paleontological findings are being processed (separating fossilized remnants of Mesozoic lizards from the original rock), is possible.

In National Museum of Natural Science in Taiching, Taiwan, you can see the documentalist drawing collection objects behind the glass. The details of her work are recorded by a camera connected to a television located within the tour path. The documentalist can also conduct a dialogue with visitors with a deeper interest through her own microphone.

Sometimes we solve the issue with a kind of hybrid, it must be noted – a required hybrid, a mix of depository and gaming room. Taiwan's second largest city, Kaohsiung, is home to the huge and well-equipped National Science and Technology Museum with seven-story exhibits. Since 2009, Open Storage (open depository) has also been on display here. In the museum, the visitor can print his name or a short message from an endless number of printing blocks with Chinese characters. Of course, with the assistance of local demonstrators who are familiar with technology used during that time period, but above all in Chinese scripture incomprehensible for us.[2] Similar creations with Chinese writing are also provided by the China Printing Museum in Beijing. We see that even "non-interpretive" access to collections has its place in museum discourse, for example in various museum pedagogical projects.

However, some museums go even further. The accessible depositories are run, for example, by the mainly ethnological Reykjanes Heritage Museum in Reykjavik, Iceland.

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1   I have visited the depositories of the Museum of Romani Culture in Brno or the Historical Vehicles Depository in Brno-Líšeň, which are part of the Technical Museum in Brno, with my students from the university in Brno many times. In both cases, with a qualified guide who created the necessary "added value" to a simple exhibition of collections. Sometimes we weren't even interested in how the collections were exhibited, but rather in showcasing "this is what the depository looks like".

2   At the time of my survey in 2011, the museum had prepared a very good exhibition on the most dangerous diseases - HIV, dengue fever, malaria, etc. I emphasise this fact because technology and science can very easily be transformed into biomedical fields in a museum environment.

These depositories have everything, overcrowded shelves full of duplicate pieces of collection items, etc. However, the depositories have entirely regular visiting hours, the entrance fee is collected, so they are actually part of a regular exhibition. This approach, in my opinion, is not a unique "look inside", "insight into the mysterious unknown", but rather an affirmation of a well-established belief that museums are storages for old useless things.

A similar result was actually achieved by the Mining Museum in Rožňava, which named its historical exhibition Museum Presentation Depository and prides itself in being the only museum in Slovakia that has its collections divided according to material groups. The exhibition presents more than 6,000 collection "items, mainly related to housing culture, ethnography, numismatics, crafts and militaria"[3]. Thus, in Reykjavík, the depositories have regular visiting hours, while in Rožňava they programmatically created an exhibition, which, with its name and the whole concept, already looks like a depository. This is the so-called formalistic presentation of museum collections.

II.

How can we use the examples presented to shape more general approaches to museum documentation and presentation? The real purpose of the museum **is not** to have objects and show them to visitors. Just as a chronicler records some event with a text fixed on some sort of a medium, we actually do the same thing with museum means of expression, which are mainly three-dimensional objects. Slovak museologist Richard Senček recently used a comparison of museum documentation to a kind of network, made up of objects, and with this network we "cover", record, document that event (Senček 2020). This network should not have many large holes, empty areas where one would lack objects that capture events. On the other hand, this network should not be too strong or too thick, because duplicate objects no longer help much to document events. The purpose of the museum is therefore to convey a specific event or fact in the best, most faithful and complete way. It does so primarily through its collections. Thus, the collection item is not a goal, but a mere means of realising the museum's intentions. Demonstrating collection items as the ultimate goal of all aspirations is one of the most common mistakes of many museums.

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3   https://www.banmuz.sk/expozicie/historicka-expozicia [cited on 22 April 2021]

We should approach presentation activities in a similar way. Admitting the possibilities of non-interpretative presentation does not call into question the fact that the basic feature of the exhibition discourse of all museum-type facilities must remain dominantly museal, even at the time of rise of various modern technologies and current museum pedagogical procedures (Šobáňová 2012, 2014). The education of the museum staff should then be a suitable mixture of expert knowledge in a corresponding field and museology. Consequently, knowledge such as "this is a vessel from the Eneolithic period" or "this is a rare or, on the contrary, common weapon from the Thirty Years' War" is completely irreplaceable. These are part of the expert knowledge. However, to this must be added the knowledge of museology, i.e., knowledge of thoughtful formation of the collection and its construction as a structure of things "belonging to each other". It is this "belonging to each other", the mutual ties, that are the main feature of a well-assembled museum collection which distinguishes it from a more or less random collection of objects from one time or another. Then comes the museological knowledge, focused on the question of how to best communicate the collection. We have to start by carefully choosing a topic, if we do not have enough means of expression within our collection – collection items, it is better not to implement it. We present the topics through our collection items, but the language of showing them (Czech professor Ivo Osolsobě would say ostension) in itself is a destitution. The objects are "praesent" here and now, they do not really know the past or future tense. Therefore, they need to be staged as theatre actors in the roles they are to play. To do this, we use traditional means of expression - maps, photos, diagrams, drawings, texts, etc., but also new means of expression provided by modern technology.[4]

III.

In the third part of my text, I will deviate from the theory of the collection and presentation activities of museums to purely practical issues, namely the museum "storage management". Due to its procedural focus, the museum is also a storage, and storing, registration or handling of collections is a long-standing problem of most museums.

When Czech museologists returned from foreign travels after the establishment of an independent Czechoslovakia, they got the impression that the collections abroad are roughly at the level of collections in Czech museums in

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4   For more, see: Dolák, J. 2015: Muzeum a prezentace [*Museum and Presentation*]. Bratislava. Dolák, J. - Šobáňová P. 2018: Museum presentation, Olomouc: Univerzita Palackého.

their quality and perhaps their scope, but their storing, physical condition and registration are significantly better. I am convinced that this statement is still valid even after a hundred years, even though it was a very turbulent period for Slovakia and the Czech Republic, when in just 100 years, several completely different socio-economic regimes have followed one another, and the joint state has disintegrated twice.

Why this is the case is a question for another article, but Slovak or Czech museums originated as manifestations of nationalism towards the ruling Hungarian or German element and were always understood as manifestations of some common national interest. While an American would say "my museum", in Central Europe, we have always said "our museum". Thus, the Slovak polyhistor of the turn of the 19th/20th century Andrej Kmeť did not collect "his collections", but "our flowers", "our folk costumes", "our archaeological finding". As if the museums, or rather the origins of actual museums, were saying: "We are not Hungarians, we are Slovaks". This also resulted in a certain tendency to collect all "our" objects as much as possible, sometimes beyond the power of the museum facility. During the First Czechoslovak Republic, museums were mainly in the hands of volunteers, World War II slowed down the development of museums and resulted in significant lack of care for the funds. After 1945, the museums' collections grew tremendously by transferring the property of displaced Germans and Hungarians, and after 1948 with the transfer of property of the so-called class enemies – the nobility and bourgeoisie. The museums were not prepared for this massive supply of collections, and subsequently, as a result of the professionalisation of museums since the 1970s, the number of collection items increased tenfold. All this placed enormous demands on the storage facilities of museums, care for the physical condition of the collections and their registration. However, the solution to the problems was very gradual. In a recent article, I wrote somewhat blatantly that all political regimes are the same in some ways.[5] In museums, externally oriented events, those visible to the public, are a requirement, meanwhile the revision of collections is taken for granted, which a supervisor politician cannot boast of. This results in a situation in which our museum industry is pushing the stone of fundamental problems associated with "storage management" in front of it. Although much has changed in the last thirty years, we still have a number of depositories that do

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5   Dolák, J.: Listopad 1989 jako mezník ve vývoji českého a slovenského muzejnictví [*November 1989 as a Milestone in the Development of Czech and Slovak Museology*]. In Zborník Slovenského národného múzea [*Proceedings of the Slovak National Museum*], História, 2021, Vol. 56. p. 9-20.

not meet the collections' needs. At the same time, it is necessary to focus primarily on the preventive protection of collections, i.e., to prevent their physical degradation in advance. Museum conservator or restorer should, ideally, have as little work as possible. Nevertheless, this depends on the storing conditions of collections and building modern depositories.

However, I would like to touch on a very sensitive subject, and that is the registration of collections and their professional description itself. I dare say that one can find some discrepancies perhaps in every museum. In some of them small, elsewhere quite serious. Despite some improvements initiated by the adoption of "museum" laws at the end of the century in both states, we cannot be satisfied with the current situation as evidenced by the May finding of the Supreme Audit Office of the Czech Republic[6] (*Nejvyšší kontrolní úřad České republiky*, abbreviated to NKÚ ČR). In addition to finding a number of other shortcomings, NKÚ ČR did not find almost three thousand collection items from recent period at ten state museums, which should naturally concern the public. I believe that many practicing museum experts would consider the conclusions of such an inspection to be a fairly good result of their work, which would probably make the taxpayer even more uncertain. Regarding the whole case, it is necessary to explain that NKÚ ČR inspected only a part of the collection funds in the mentioned ten museums, so the overall situation is even worse. The presidency of the Czech ICOM Committee[7] and Zdeněk Kuchyňka[8], on behalf of the executive of the Czech Association of Museums and Galleries (AMG), held a dispute on the findings of NKÚ ČR. I do not assume that a similar inspection in Slovakia would turn out significantly better. Although the report of the Supreme Audit Office of the Slovak Republic[9] (NKÚ SR), which dealt with twelve national digitisation projects implemented by nine organisations directly subordinate to the Ministry of Culture, contrasts sharply with the Czech NKÚ's findings. A total of 205 million euros was spent from

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6   https://www.nku.cz/cz/pro-media/tiskove-zpravy/ochrana-muzejnich-sbirek-ma-radu-nedostatku--stat-nema
     -prehled-o-sbirkach-v-cr-id11197/ [cited on 20 May 2021]

7   Špatná nebo dobrá zpráva o muzeích? [*Bad or Good News About Museums?*]. In: Věstník AMG, 2020, No.
     3, p. 22-23.

8   Kuchyňka, Z.: „Dárek" k Mezinárodnímu dni muzeí [*A "Gift" for International Museum Day*]. In: Věstník AMG,
     2020, No. 3, p. 21-22.

9   https://www.nku.gov.sk/aktuality/-/asset_publisher/9A3u/content/kulturne-dedicstvo-sa-vdaka-digitali-
     zacii-moze-dostat-do-kazdej-domacnosti?inheritRedirect=false&redirect=https%3A%2F%2Fwww.nku.
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     [cited on 25 May 2021].

the Operational Programme "Informatisation of Society" and, according to the NKÚ SR, the set goals were largely exceeded.[10] Was the implementation of digitisation programmes really so administratively perfect, i.e., the flawless selection procedure, everything took place on pre-determined dates and in fact one of the few shortcomings is the creation of fewer jobs for women than originally expected?

Perhaps it is the bad epidemiological situation of recent years and the need for the state to outinvest the economic crisis that could revive museum programmes, this time not for visitors, but for collections. If museologists, or at least part of museums' teams, have more free time these days, there could be a general revision of funds, the much-needed sorting of collections from duplicates, or items that have ceased to serve their purpose or do not have the required museality or accompanying documentation, etc. The truly necessary items must be linked to the modern type of registration, probably the most usable are still the RFID systems. If I am not mistaken and my information is correct, Slovakia has a software ready for it. The initial costs would perhaps not be very small, but they would return very quickly by extraordinarily reducing the time needed for regular revisions and significantly reducing the possibility of losing a rare item, which unfortunately sometimes involves the museum staff themselves. What to say in conclusion? The level of registration of each package of semi-coarse flour in the supermarket is still an unattainable dream for every museum. Even though, unlike the collection item, it enters the financial exchange. Thus, my call for a large-scale coordinated project to register and store collections is actually nothing astonishing. I would like a system of collection item storing and registration at the level of a semi-coarse flour package in every supermarket. Nothing more.

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The experiences of the Narvik War and Peace Centre in the collection protection and presentation

By Eystein Markusson, Director

The Narvik War and Peace Centre

The Narvik War and Peace Centre is a non-profit foundation that researches, documents and disseminates on issues related to war and conflict with a particular emphasis on the North.

Our story starts with the German attack on Narvik and Norway in 1940, the battle of Narvik and the occupation that followed. However, we also work with issues not related to the Second World War (WWII). We have a particular focus on the rules of war (IHL) and human rights.

It is the northernmost of seven Norwegian peace- and human rights centres funded by the Norwegian Ministry of Education. We are members of ICOM, IC-MEMO and ICOMAM.

Key figures

The Centre is located in the town of Narvik, Nordland County at 68° North. Geographically we work in the Northern region (approximately 1750 km by road from North to South). The Centre has 36 000 visitors/participants and currently 14 full time positions.

Research and documentation

- The Battle of Narvik

- Military operations during WWII

- German occupation during WWII and its consequences for civilian life and others

- Soviet POW's, the Germans brought approximately 100 000 POW to Norway and the density of prisoners were highest in the North due to

extensive building of coastal fortresses and railroad and roads

- Yugoslav prisoners

- Red Cross during WWII

- Research on didactics for peace education

The Narvik War Museum

Established 1964, and has been in continuous operation since. It is currently operated by the Narvik War and Peace Centre. The building holds 3000 m^2 exhibitions, auditorium, offices, archives and depositories.

The exhibitions of the museums are about WWII in the North, but also covers universal issues related to war and conflict, such as human rights and hybrid warfare.

It was moved from inadequate facilities in 2016 to a new building after receiving a grant from the Norwegian Ministry of Education and in the process the exhibitions were redone.

On exhibitions and collections

ICOM guide of ethics § 1.4 Access, states that:

The governing body should ensure that the museum and its collections are available to all during reasonable hours and for regular periods. Particular regard should be given to those persons with special needs.

← From the permanent exhibitions of the Narvik War Museum, a Norwegian soldier's uniform,

weaponry and other items used by the Norwegian Army during the fighting in 1940. Photo: Narvik War and Peace Centre /Michael Ulriksen.

However the exhibition does by no means show all of our collection, as will be the case for most museums, and the ambitions of the ICOM guide of ethics are quite a large, or rather an impossible task to take on. This is also central to the idea of the open depository.

The Collection of the Narvik War and Peace

Centre

I will briefly introduce our collection as I find it fruitful to work from concrete and practical examples.

It is mostly WWII related: uniforms, heavy machinery, guns, but also civilian clothing and other everyday items from the period.

← A section of the current depository of the Narvik War and Peace Centre, showing a collection of mines, ignitors for bombs and various handgrenades. Photo: Narvik War and Peace Centre/Eystein Markusson.

- 29606 historic artifacts
- 8015 photos
- 300 shelf meters of historical archives.

When curating the current exhibition each item was given more space to make it relevant to target groups. Some, but not all, items are vulnerable. Military items are built for rough use and some of them can withstand harder treatment than most other items, e. g. cannons and heavy machinery, and are not easily destroyed or damaged, while others are easily prone to damage such as stamps, textiles. Most items are in storage, however many are duplicates or similar versions of the same type of object as exemplified by the above-mentioned handgrenades. To most people to see one handgranate is enough, while to other people the differences and diversity of hand grenades is what intrigues them.

The Audience

The audience is central to what parts of and how we choose to present our collection. In 2019, which was our last normal year of operation.

- Total 36 0000

- 7600 from schools

- 930 military personnel

- 26 500 general admission/tourists

- 1100 seminars etc

- 65 % of general admission are non-Norwegian, coming from 44 nations.

The consequence of choosing your target groups

The Centre is able to operate on its current level due to funding from the Norwegian Ministry of Education to educate school children and teachers about human rights, violations of human rights and democracy with the background of WWII. That makes schools and school children our primary target groups. Secondly, there is a quite large group of tourists visiting the museum, and we believe that if you know what a first grade high school student should know, you know a lot. That should also fathom what a general tourist will be interested in and have the prerequisite to learn about from a museum visit.

For the purpose of my discussion I will define a general tourist as a person who will visit a museum or any other attraction as a part of their journey, without the topic of the museum being the main focus of their journey.

An audience can be divided into many different target groups, depending on demographics, interest etc. However, one target group stands out, and had to be given lower priority due to our obligations to our mission. This is what we can term the military history aficionados. The group is constituted by people who are keenly interested in military and war history, they are very often very interested in the items and the use and composition of the items themselves and many of them are way more knowledgeable about their particular field of interest than most of our staff. We estimate that the military aficionados make up about 1/10 of our visitors.

We have found that the needs of the two first groups, the school children and tourists, are to a large extent incompatible with what interests the military history aficionados.

In order to keep the interest of school children and general tourists you have to omit details like calibres, measurements, how far weapons could shoot etc. However, this is exactly the details that the military aficionado is interested in. They would really like to see more items and it is a pity that we have all these items in our closed depositories when they would like to see them. Since we moved to our new building in 2016 we have been considering how we can make this happen; how can we show more of our items to these very interested people without damaging the dissemination to the other two groups, which are by far the largest?

That is where the open depository comes into play and we are hoping that through the Open Depository project we will be able to conclude on this and move forward in creating an open depository in our Centre in addition to our current exhibitions and depositories.

Brief account on open depositories in Norway

The open depository is the talk of the museum trade in Norway, and has been for a while, but hardly anyone has tried it, although several plans exist. As Barbara de Haan states in her 2019 paper: *In Norway the open depository is always debated with enthusiasm at the start of every new planning of a depository, but almost always discarded just as soon. Curating (not true depositories), protection, costs of establishing/building and operations.* («Planlegging av magasiner til nytte for brukerne: for formidling, forskning og publikum – med bevaring for øye». Downloaded from https://dms-cf-03.dimu.org/file/03347T1UtoRh, 15.02.2021, my own translations from Norwegian).

There are probably several reasons for this. Costs increase when allowing the public into depositories, and danger of damage to the artifact themselves due to changes in environmental factors such as humidity, temperature, people touching the items etc.

Also, it is my belief that in general, funders do not like to fund storage. Perhaps put a bit blunt, but politicians like to open buildings that are open to the public and can make them get re-elected, that is why it is easier to fund an exhibition or an auditorium than a depository, which to people outside the museum trade is seen as a bit boring.

There is currently an ongoing trend to digitize and to make the collections available to the audience through the internet. This trend was of course strengthened by the onset of the corona pandemic. This is also a main point in the latest Norwegian Government white paper on museums (Meld. St. 23 (2020–2021) Musea i samfunnet — Tillit, ting og tid). Presenting items and collections on the internet is of course very useful and can be used in combination, but seeing the object in real life has an intrinsic value, the power of presence.

Some museums in Norway arrange guided tours in their depositories, but most, like ourselves, are strictly non-open, as items are unprotected from people touching or even stealing them and this is the situation in most museums in Norway.

To conclude, there is large interest within the Norwegian museum community in open depositories, but no major move has been made lately.

A case study on the creation and preservation of open inventory
for The Warsaw Rising Museum collection of WWII photographs

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A case study on the creation and preservation of open inventory for The Warsaw Rising Museum collection of WWII photographs
/method of presentation, sharing and development plan/

Joanna Lang

Warsaw Rising Museum / Head of Iconography and photography department

Established in 2004, the Warsaw Rising Museum is dedicated to the Warsaw Uprising, which took place 60 years earlier from 1 August to 3 October 1944 as a manifestation of Polish resistance against German Nazism and against approaching Soviet totalitarianism. It was one of the biggest battle in the II world war, ended after two months of a most heroic effort.

The Warsaw Rising Museum is Poland's first, modern narrative museum, it started a 'museum boom' in the country.

The permanent exhibition shows our capital's dramatic history and gives visitors an opportunity to discover the character of the city. The Museum makes an important contribution to the community of Warsaw. We rebuilt not only the image of the city that no longer exists, but also the identity of the city's present residents.

Archival photographs play a crucial role here, with the permanent exhibition including almost 3000 photographs.

Since its opening, our museum has received 500 000 visitors a year, in 2019 it reached 700 000.

Thanks to the popularity of the then still young invention of photography and its role in propaganda and documenting the Second World War, the Warsaw Rising became the first event in Polish history to be so well documented on film.

Our objective was to find and acquire as many archival photographs and films documenting the event as possible. We wanted to obtain the most complete picture of the Rising, showing fights in respective districts of the city as well as individual units and the fate of the civilian population.

We realised that in order to achieve that we also needed a broader background view of the changing city - not only of the fighting Warsaw, but also of Warsaw before the Rising and World War II, a once beautiful city that suffered a lot under very aggressive and harsh German occupation, and of the ruins of Warsaw after the city had been razed to the ground and plundered.

The results were astonishing. The collection now includes over 50,000 original photographs, of which nearly 20,000 were taken directly during the Rising. If one agrees that the purpose of the museum is to gather collections, then we can feel satisfaction at this point.

Although invented 200 years ago, photography continues to be very popular. Contemporary society is rightly termed as 'the society of image' in which a picture is an immensely important means of passing information. This is why iconographic collections documenting historical reality are so important to museums, especially narrative historical ones.

And for us, an iconographic collection is a very special museum phenomenon. A photograph is a material object, a digital copy and a digital record of a moment from the days gone by. When working with an iconography collection we deal with tangible and intangible heritage at the same time – a silver-gelatine negative and an image of an actual moment in history.

Apart from archival films, our collection includes primarily original photographs in various forms: black and white gelatine-silver negatives on nitrate and acetate films, black and white paper prints, a collection of chromogenic films and paper prints, as well as glass plate images. Gathering our collection, we dealt with various types of photography - from single positive prints to large series of film frames on negatives which provided a step-by-step record of the events. There are albums compiled during combat and after the war. In terms of numbers, the dominant group of the collection includes identified photo sets i.e. photographs taken by photo-reporters known by their real names who worked for the Bureau of Information and Propaganda of the Polish Home Army.

Thanks to the popularity of photography during the Second World War, the Warsaw Uprising became the first, most documented event in Polish history.

A case study on the creation and preservation of open inventory
for The Warsaw Rising Museum collection of WWII photographs

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Working in the Warsaw Rising Museum from the very beginning I have had the great pleasure of meeting many of Polish Home Army photographers personally.

Images of the Rising are brought to us by:

Eugeniusz Ajewski, Stanisław Bala, Stefan Bałuk , Andrzej Bargiełowski, Tadeusz Bukowski, Jan Bułhak, Olgierd Budrewicz, Antoni Bohdziewicz, Sylwester Braun, Władysław Brewczyński, Jerzy Chojnacki, Wiesław Chrzanowski, Juliusz Bogdan Deczkowski, Edward Dziewoński, Czesław Gerwel, Marian Grabski, Zbigniew Grochowski, Eugeniusz Haneman, Joachim Joachimczyk, Witold Edward Koneczny, Jerzy Kokczyński, Irena Kumannt Skotnicka, Stefan Lewandowski, Eugeniusz Lokajski Tomasz Lubicz-Zalewski, Wojciech Marczyński, Władysław Martyka, Jerzy Michalski, Bernard Morawiński, Czesław Olszewski, Henryk Poddębski, Stefan Rassalski, Danuta Smoszewska, Leonard Sempoliński, Henryk Świercz, Edward Tomiak, Witold Wierabiński, Edward Wojciechowski, Ryszard Witkowski, Sabina Żdżarska, Wacław Żdżarski, Jan Żułma.

The iconographic collection held by the Warsaw Rising Museum is a special example of a collection built from scratch by a new institution.

Our objective was to find and acquire as many archival photographs and films as possible. We wanted to obtain the most complete picture of the uprising and of Warsaw under German occupation.

The results were astonishing. The collection now includes over 50,000 original photographs, of which nearly 20,000 were taken directly during the uprising, as well as 6 hours of documentary films.

It is a great example of a collection drawn from the local and global public. We have received more than 9,000 donations of memorabilia from all over the world. Being grateful for these donations we wish to contribute as well through our photos making them available for the broader public.

Photographs serve as autonomous and authentic historical sources. This attribute can be made stronger by a proper substantive description of the event presented, defining the location and identities of the people captured in the photo. We try to precisely identify the sites shown in our archival photos in the city's contemporary landscape by using aerial photos and Google earth.

We have made our collection available online in 2007, and the photo-library on our website is an effective tool to share and promote history.

Our photo library was translated and available in English and German.

And photos of Uprising have been shared all over the world.

Museum website

2014 - 70th anniversary of the Uprsing
1 400 000 website users
2020 - the Pandemic Year
3 000 000 website users
Photo-library 2020
235 orders
Including 172 free of charge
2398 downloads of photos
30 000 vieves
Because of the 13 years of my maintaining the on-line library, I have titled my speech – a case study.

In 2006 we bought and developed for our particular needs – electronic inventory application Musnet - we started two main inventories: one for original negatives and one for original positive prints.

Our on-line photo library Phototheqa launched in 2007, was directly connected with our iconographic inventory so as to transfer a new group of photos and to show them in the photo-library on the website was an easy and smooth process.

Not all data from main inventory Musnet is accessible on-line.

Visitor can see the photos with their unique inventory numbers, detailed descriptions – the same as in Musnet, information about when and where photos were taken, and what is also very important they can see the name of photographer.

In our inventory on-line we share only a part of the photos from our collection:

We established some specific criteria, according to copyright:

1) Firstly – digital copies are taken from the original photos
2) Secondly – the museum obtained full copyrights from the authors or theirs families

The only exemption is a particular interest group of photos of occupied Warsaw taken by anonymous German soldiers. It was the only way to show picture of Warsaw under German occupation because taking photos or even possessing camera was forbidden for Polish citizens in this time.

A case study on the creation and preservation of open inventory
for The Warsaw Rising Museum collection of WWII photographs

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According to technical requirements.

Digitisalition of the collection is very important for us, The archival scan is a perfect digital copy of the object, which provides the maximum amount of information. Especially original negatives, are photographed onto a hypersensitive matrix, and not scanned. We obtain a high-resolution copy on an RGB colour chart, which may be turned into grey scale and reversed into a positive. The archival scan is colourful, presenting in detail the state of the object's preservation including all discolorations, and is a perfect digital copy of the negative, which provides the maximum amount of information stored within it.

Here is an example of how a professional digitalisation can provide a lot of new information.

You can compare the results of this two digitalisation techniques (scanning or taking photos of negatives)

Such high resolutions scans we have in our repositories but on-line library scans are much smaller – Tiff 300 dpi, it is enough for almost every publications.

Another important matter concerns the rules of sharing

It was a subject of great discussion at the last general ICOM conference in Kyoto 2019.

Many museums were proud of the opening their inventories to a wilder public by publishing theirs scans of photos or documents online in small resolution.

But others wishing to use these photos, have to pay, sometimes really expensive fees.

We decided that our photos should be made available free of charge to all private users and to schools, as long it is not a commercial publication.

The great idea of sharing museum collections openly by means of on-line inventory must be important part of the museum strategy and policy.

Looking at our case study – what is really important and can be problematic is to keep good technical connection between our electronic inventory like Musnet and their on-line parts.

Our electronic inventory Musnet has remind the same for 14 years, it's a little bit old and requires some afford to work with, but we would change it for

new one, only under one main condition, that all of the date contain in our data base could be well retain.

In the same time our museum website as a main tool to inform and promote museum, was reinvented to be more attractive 3 times, our photo library is only a small part of the museum website.

Phototeque was created as well to commemorate our heroic resistance photographers. We show the photographs they took but also the photography of themselves   along with their biographies.

There is collection of photos taken by one of the most important photographer E. Lokajski nickname Brok. And a beautiful, monumental album of his photos was published by our museum just a few weeks ago.

Preparing an open inventorie is an creative work, quite similar to publishing a book. We also used to prepare a video announcing new interesting photos from our collections in the media.

The resulting photo collection is well digitalised, well described, analysed and shared with others, both the general public and other institutions.

Contemporary society is rightly termed as 'the society of image' in which a picture is an important means of distributing information.

And for the future...we have a lot of new ideas about presenting our photos.. One of them is to use google maps of Warsaw.

We describe our photos very accurately and precisely, looking for the exact location in time and space.

Here is the file with the Locations of Brok's photos collection - to be opened by GoogleEarth.

For example - the first photo (MPW-IN / 1) is connected with the photo library – after pressing a point on the map, a window will open showing a photo and description, and the link to our photo library.

However, photography is a story, a moment from the past preserved in silver molecules, it is a story of a city, it is a story of heroes… so we all can enjoy observing history by looking at our photos...

You are most welcome to see our photo-libray on our museum website

https://www.1944.pl/fototeka.html or www.facebook.com/1944pl

Military gatherings in Norway: overall framework and the current situation in Narvik

Ulf Eirik Torgersen

The Narvik War and Peace Center./ Leader for the collections

At the outbreak of the war, Norwegian infrastructure was, to say the least modest in German eyes. So the need for an extensive development began immediately after the occupation occurred in June 1940, after two months of battle. Throughout Norway, but especially in northern Norway, this was a necessity to ensure German occupation and presence in an elongated country. This is especially evident after the invasion of the Soviet Union, and the opening of the northern front towards Litza from Norway

The need for protection, logistics and accommodation for the army, navy, air force and coastal defense, became precarious and German building activity explode.

One of the largest projects in Norway was the building a part of the Atlantic Wall (Coastal Fortifications along the Norwegian coast) and the continuation of an inland logistics railway planned all the way up to the North of Norway who stops in the middle of Norway in 1940.

After World War II, much of the German remnants were regulated and disposed by Allied forces as part of the war buty, emphasizing Allied interests and the need for material. Thereby, a quantity of usable military equipment was crushed or dumped into the sea, including equipment that could be used in a civilian context such as cars, catepillar, etc. The aim of such a disposal was to gain access to important resources such as high wallue iron, copper and other metals, as well as strengthen the reconstruction of civilian industry, and of course secure modern weapons systems.

What was also behind this destruction in Norway, was that in January 1945 then the Norwegian government accepted a secret offer from the British government to deliver defense equipment to a new and rebuilt Norwegian defense es-

tablishment after a German capitulation - and also for the equip and training of a Norwegian division in Germany, who was established in 1946.

There were comments from Norwegian military authorities about the unnecessary destruction that was in process in the autumn of 1945, it resulted that some of the parts of the German remnants could be reallocated for civilian and military use, but then at a minimum level in relation to the enormous amounts of German military material that was taken over on Norwegian soil from almost 450,000 German capitulating soldiers and structures who was left behind.

Another aspect of material that remained in Norway was from the Allied involvement during the fighting in 1940 and the following five years, where their equipment has an ownership where this can be traced. Her by a lot of aircraft and ships who went down.

So for up to 60 to 70 years, this has resulted that divers and treasure hunters has taken out a lot of war memorials in Norway and Narvik.

Not until the 50th anniversary of the end of World War II in 1995 was the momentum given on a large local activity related to the war history of the individual places. This led to a new awareness in connection with the history of the war, which had several effects. The time was ripe to tell not only about the victors, but also about the history of the occupying forces. It also opened up a more nuanced view of local events and human behavior during the war. Together, this formed the breeding ground for a significant interest in material traces of the German presence; and special for the younger generations.

In Norway, we have a state institution or museum for the management of military equipment, both from the war and other eras, with underlying institutions/ museum for the various branches of defense.

In addition, private and local organizations took the initiative to collect war material, where the District of the Nordland Red Cross in Narvik at that time, did this as early as in 1964, with the opening of a local museum which is now a part or merged with The Narvik War and Peace center who my Director Mr Markussen have given a presentation about.

In the time that has passed since its establishment, the museum had to say <u>no</u> to a lot of large objects such as vehicles and artillery, but still, we have some objects of this size in magazines and exhibition.

The museum's collections are mainly established by donations from both private and government authorities. So, our collection of objects has grown enor-

mously from the establishment in 1964 with an exhibition of 150 m2 to today an exhibition of 1450 m2, In addition of this comes magazine for storage objects.

95% of our artefacts is related to the battle and the occupation period from 1940 -45. The objects that are in magazine, have a high exhibition value, when it comes to mechanics, technology, weapons and uniforms. Where this object comes from all branches of defense, and nations involved.

The new exhibition is built up to provide knowledge to the younger generation, where we have been selective in the selection of objects that can tell a story in the overall museum communication.

So, we have taken away the width and different types of same objects what could have been possible to put on display. Here, we could in a traditional exhibition been putting up for display tree types of Schmeisser machine guns just to say something about the small changes in the weapon, but could say nothing more about the main history and the time of use. So, we only have one on display to give a short cut to the history and not overload the visitors with information, many similar examples we could brought forward in our construction of the exhibition.

The result of our choice is that we got several requests and perhaps a number of criticisms as well from our visitors, who wants more objects and knowledge on display. So, to serve an increasing public demand to see more of the collections which the existence of the museums is founded on, and how a museum works, we will with the Open deposit project meet other visitors, historians and researchers, by presenting material in a new form of exhibition, which makes it easier for us as a museum to put on display more thematic deep dives and do changes who would meet a wider audience's need to know and see.

The advantage of this for us, is also to get a review of our magazines, including registration, photographing and not least preservation.

With the move into a new building in 2016, a lot of objects was packed down into containers to be able to move to it's new location, magazine and exhibition, in a very short period of time. So, it was not enough time to pack it all out, and some of it is still in containers. But a lot of objects has been unpack and given a preventive conservation in the last couple of years by changing temporary exhibitions and reorganizing of the magazines, but still a job remains.

We welcome the project and the collaboration with you, and look forward to the further work and development for us as an museum, and not least for our visitors. It will also give all of us valuable experience with one alternative way of presenting and using collections.

Collection storages of the Slovak Technical Museum – Modernisation Problems of Collection Management
Our Endless Story

Zuzana Šullová

Slovak Technical Museum, Košice

Príspevok stručne opisuje situáciu Slovenského technického múzea v oblasti odbornej správy zbierok – konkrétne problémy s trvalým odborným uložením zbierkových predmetov. Prípad realizovaného projektu „Zriadenie centrálneho depozitára STM" môže poslúžiť ďalším múzeám pri plánovaní adaptácií priestorov na múzejné depozitáre, pri plánovaní masívnych transportov zbierkových predmetov a pri zavádzaní moderných efektívnych prvkov odbornej správy zbierok.

Instead of an Introduction – Who We Are

The Slovak Technical Museum (hereinafter referred to as the "STM" or "museum") is a state-subsidised contributory organisation established by the Ministry of Culture of the Slovak Republic. In terms of regional scope, it is a national museum, in terms of specialisation and focus, it is a specialised museum with museum documentation in the field of history of science and technology. Within its specialisation, it fulfils the tasks of a collection-making, scientific-research and cultural-educational institution and acts as an information, methodological, coordination and educational centre for museum activities. Since its establishment in 1947 in Košice, the STM has gradually expanded its operations to include branches and relocated workplaces in Prešov, Spišská Belá, Budimír, Medzev, Bratislava and, temporarily, Spišská Nová Ves. At the

moment, the museum carries out its activities in state-owned buildings as well as in leased buildings, in many cases in national cultural monuments. To be specific, there are 33 buildings, of which 16 have the status of a national cultural monument. The centre of the STM's activities is the headquarters in Košice. Selected museum activities are performed in specialised branches in the Aviation Museum in Košice, the Museum of Transport in Bratislava, the Solivar Museum in Prešov. Workplaces Kaštieľ in Budimír, Museum J. M. Petzvala in Spišská Belá, Museum of Cinematography of the Schuster family in Medzev are focused exclusively on presentations. The STM also professionally manages selected immovable cultural monuments of a technical nature, in addition to the NKP[1] Solivar in Prešov it is also the NKP Hámor in Medzev and NKP Hutu Karol in Vlachov.

What We Store

During its 74-year-long existence, the STM has collected more than 36,000 pieces of collection items in its managed collection fund (as at 31 December 2020, the number of registration units was 18,869, which represents 36,306 pieces). Within the national collection fund, these are included in the group "technology history collection". The structure of the fund reflects the main areas of the museum's documentary interest, although it has undergone several changes. So far, the most significant adjustments were made in 1968 and 2011.

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1   NKP: Národná kultúrna pamiatka (National Cultural Monument)

Tab. 1 Changes in the structure of the collection fund of the Slovak Technical Museum

y.1948	y.1968		y.2011		y.2019	
COLLECTION	COLLECTION	SUBDIVISION	COLLECTION	SUBDIVISION	COLLECTION	SUBDIVISION
Smithcraft	Blacksmithing		Blacksmithing		Blacksmithing (Ko)	
Mechanical engineering	Mechanical engineering	General m. engineering	Mechanical engineering	General m. engineering	Mechanical engineering (Str)	
		Energetics		Energetics		
		polygraphy		Textile machinery	Energetics (En)	
		Aviation				
		Textile industry			Textile machinery (Ts)	
		Typewriters				
Textile industry						
Polygraphy			Polygraphy		Polygraphy (Po)	
Motor vehicles			Transportation	Railway	Transportation	Railway and ship (DB-Z) (integrated water management)
				Motor		Road (DB-D)
Railways	Railway					
			Aviation and aviation technology		Aviation and aviation technology (L)	
Electrical engineering	Electrical engineering	Communication technology	Electrical engineering	Communication technology	Electrical engineering	general (E)
				Household appliances		communication (D) (incl. computational)
				Computational technology		
Telecommunications						
Photographic and cinematographic			Photographic and cinematographic technology		Photographic and cinematographic technology (Fo)	
					Cinematography technology (Mm) /Museum Medzev/	
Construction industry	Construction industry		Construction industry		Construction industry (St)	
Mining industry	Mining industry		Mining industry		Mining (Ba)	
					Mining-Saltworks (Ba-S)	
Land surveying	Geodesy and cartography		Geodesy and cartography		Geodesy and cartography (Geo)	
Physics	Physics		Physics		Physics (Fy)	
Wood industry	Woodworking					
Melioration						
Lighting fixtures						
Typewriters and sewing machines			Office machines		Office machines (Ks)	
	Metallurgy		Metallurgy		Metallurgy (Hu)	
	Astronomy		Astronomy		Astronomy (A)	
	Chemistry		Chemistry		Chemistry (Ch)	
	Watchmaking		Watchmaking		Watchmaking (Ho)	
	Water management		Water management			
	Various		Various		Various (R)	
			Industrial design		Industrial design (Pd)	
					Medical technology (Zt)	

The objects of the STM's acquisitions are tangible documents of the development of science, production, technology, transportation and industry, particularly objects with information, scientific and historical value reflecting the development in trades, such as: Metallurgy, Blacksmithing, Mining (and Mining-Saltworks), Mechanical engineering (including part of road transportation - historic motor and non-motor vehicles; Office machines, Energetics, Textile

machines), Construction industry, Electrical engineering (general electrical engineering, communication technology, computational technology), Watchmaking, Geodesy and Cartography, Polygraphy, Photographic and cinematographic technology, Transportation (Aviation, Rail and ship, Road transportation), Industrial Design, Physics, Chemistry (including Food industry), Astronomy, Medical Technology. The acquisition processes are strictly governed by the museum's acquisition policy, which is, of course, in accordance with the current legislation in the Slovak Republic. The selection criteria for acquisitions in the STM collection fund are evaluated as qualitative characteristics of potential collection items (value, significance, price, rights, usability, context with institutional policy, etc.) as well as quantitative (type, form, kind, scope, size, number, affiliation, etc.). In addition to the assessment of the qualitative features, scientific-research selection criteria, contextual criteria, physical selection criteria, the evaluated prerequisites of the museum **are to ensure adequate long-term professional protection for an object with the aim of its permanent preservation** (complexity of professional treatment and professional storage). Unfortunately, in the context of the long-term problems of the STM with the conditions of permanent professional storage of collection items, in many cases the latter criterion is the reason for the decision not to accept significant potential artefacts into the permanent custody of the museum.

One of the fundamental particularities of a movable cultural heritage of a technical nature (i.e., artefacts preserved by technical museums) is the material diversity and the huge dimensional range. These are, in particular, metal, wood, glass, textile, plastic, paper objects essentially in combinations of many materials. In terms of dimensions / dimensionality, in its collections the STM stores items from miniature components to large-scale machines or technological equipment. At the moment, the largest collection item is the Tugboat Šturec - to complete the idea, it is a ship with the length of 56 m, width of 9 m, the maximum height of the fixed point above the keel 6.85 m, and the total weight of 330 t! The parameters of aviation technology are also worth mentioning, e.g., the Il-18 aircraft has the length of almost 36 m, width of 37 m, height of 10 m and the "empty" weight of 35 t. Of course, these extremes are exceptional, but they illustrate the idea of the complexity of the processes associated with the comprehensive care of these kinds of collections. At the same time, they are an example of collection items where the information about its storage/ reserved placement in the storage - "permanent placement" - is actually, in most cases, formal…

Tab. 2 Acquired material for the collection fund of the Slovak Technical Museum

Metallurgy: primary ferrous production (samples, raw materials), primary non-ferrous production (samples, raw materials), refractory material, images with the theme of metallurgy, sculptures and castings with the theme of metallurgy, photographs and audio and movies and drawings and diapositives on the topic, instruments, models, decorative castings, cast iron tiles and accessories, mills, bellows and blowers, grinders, scissors, metallurgical tools and instruments and equipment, price lists and catalogues, technological processes of production, crucibles, hammer tools and instruments, hammer products, tissue samples, consumer items on the topic, bells, archaeological findings, plates, bowls, trays, irons, baking pans and forms, candlesticks, other lighting fixtures related to metallurgy (lanterns, lamps, chandeliers), sacral items on the topic, weapons in connection with material, certificates, cutlery, debris, heat-treated and coated products, forged and pressed, technical castings (ferrous and non-ferrous), fuels, mercury production, skillets and boilers, medals and plaques, other kitchen utensils (bowls, trays, pots), metallurgical secondary production (drawing, rolling, knitting, extrusion), wafers, powder metallurgy (ferrous, non-ferrous);
Mining: mining work tools (hammers, mallets, chisels, hoes, drills or hand drills), lighting technology used in mining (lamps, Sicilian lanterns, oil lanterns, carbide lamps, safety lamps, petrol lamps, rechargeable lamps), devices and equipment for the transport of rubble, technical devices for measuring physical and chemical quantities in mining, security technology, objects related to saltworks;
Blacksmithing: grillage and railings, decorative elements, consoles and company signs, lighting fixtures, hinges, keys, handles, locks, doors and gates, crosses, plaques, statues, forged figures, working tools, blowers, treasuries, furnishings, forgings and components, supplementary material, wire products, accompanying documentation to the subject;
Mechanical engineering: engineering products (historical products, products of schools, craftsmen, manufactories, factories, plants), metalworking tools, school supplies and machinery models, technical equipment, gas meters, machine tools, other (special products, rarities, remarkable technical solutions, historical engineering objects), bicycles, motor technology, motorcycles, energetics equipment, technical documentation;
Construction: castings, mostly gypsum, facade decorations of historical buildings, fragmentary products, products and samples of the ceramic industry;
Electrical engineering: telegraph technology, telex technology, fax machines, telephone sets, telephone switchboards, gaming machines, phonographs and gramophones, flat reel chimes, wired phones, radio receivers, television receivers, radio and television technological equipment, electrical components, recording media, computer technology inclusion storage media and peripheral devices. Equipment of heavy current electrical engineering and power engineering, documentation and accompanying material;
Watchmaking: clocks, watch machines, particularly in functional condition, accompanying documentation, horological tools, instruments and supplies;
Geodesy and cartography: instruments and devices for measuring distances, angles, elevations - astrolabe, compasses, inclinometers, angle heads, mirrors, scanting, measuring tables, theodolites, tachometers, levelling devices, geodetic aids – levelling bars, signs, extension sets, planimeters, transporters, protractors, rulers, spirit levers, tripods, measuring tapes, nails, maps, cartographic works, globes, atlases, selected representative cartographic works, maps;
Polygraphy: high-speed presses, rotary presses, typesetting machines, complete book printing, bookbinding workshop or its parts, accompanying documentation for machinery, examples of printing techniques - woodcarvings and woodcuts, engravings, lead engravings, steel engravings, as well as lithography techniques;
Office machines: typewriters - mechanical, electrical, electronic, copying and duplicating machines, documentation material, accompanying documentation;
Photographic and cinematographic equipment: photographic equipment - studio, travel, tilting, strut, box, single-lens and double-lens reflex cameras, devices for instant photography, miniature devices, compacts, stereoscopic, panoramic, special and digital, including recording media, photographic lenses of various optical parameters and constructions, devices and accessories used in professional and amateur photographic practice, imaging cameras, projection (projection) devices, amateur cameras, including accessories, symbols of advent of digital technology;
Rail and ship transport and **road transport:** motor vehicles, non-motor vehicles (carts, carriages, wagons, sleighs), substitutes for large objects, especially models, prototypes, traffic signs, driving school devices and equipment, transport-related clothing, tools, instruments and devices, printed matter, medals, decorations, transport-related images, useful items thematically related to passenger travel (various parts of luggage), parts, components, mechanisms, 3D documentation for the activities of specific professions in railway transport in Slovakia and 2D documentation on the topic of railway transport in the territory of Slovakia in mutual cooperation with ŽM SR (Railway Museum of the Slovak Republic) on road, shipping and rail transport;
Aviation: aircraft engines, aircrafts, helicopters, construction elements, aeronautical instrumentation, equipment and accessories, documentation material and accompanying material;
Industrial design: author's models, sketches, designs, studies, projects - presenting and documenting the authenticity of the designer's work, objects realised in the production process according to the design proposal, documentation on the creation and origin of a project or object - company literature, catalogues, brochures, magazines, photo documentation, awards;
Physics: teaching, demonstration, laboratory, audio-visual devices and aids, wall maps, paintings wit the theme of the history of physics, documents related to important physicists - portraits, sculptures, photographs, medals, textbooks, legacies, movies, diafilms, lectures by professors, student notebooks, plaques, patents, inventions, instruments from individual aspects of physics - mechanics of solids, liquids and gases, thermals, acoustics, optics, electricity and magnetism, subnuclear and nuclear physics, mass, length and volume meters, measuring instruments, various sources, observation instruments, demonstration instruments, objects documenting applied physics, textbooks of philosophy of nature, later physics – also in foreign languages, accompanying documentation - company catalogues, etc .;
Chemistry: devices from individual areas of chemistry, namely inorganic, organic, instrumental, physical, biochemistry, nuclear chemistry, laboratory instruments, catalogues of instruments and chemical glassware, instruments for determination of Ph, colorimetric instruments, instruments for gas analysis, polarimeters, refractometers, viscometers, calorimeters, polarographs, hygrometers, manometers, microscopes, thermal devices, devices for elementary micro- and semi-microanalysis, extraction devices, various baths, thermostats, sterilizers, laboratory equipment, vacuum technology, devices for filtration and distillation, laboratory tools, models, samples of materials, products, paintings in relation to chemistry;
Astronomy: observation and aiming astronomical instruments, demonstration instruments and aids, accompanying material, documentary material on the topic;
Medical technology: equipment and furnishing of medical facilities / ambulances - selected parts of material equipment and material/technical equipment of ambulances, hospitals, sanatoriums - with emphasis on Slovak equipment, or of Czechoslovak origin, especially from the production of companies of the CHIRANA Stará Turá Group.

Our Endless Story

The STM's approach to the issue of professional management of collections and the current conditions of professional protection, i.e., professional storing, professional record making, professional treatment is an image of a still prevailing reality in many museums in Slovakia. Preference for museum communication/presentation activities and accompanying activities, which we have witnessed since the 1990s, and overlooking the fundamental essence of a fund institution has put us in situations far beyond the "critical point."

In the case of the STM, a comprehensive picture about the state of permanent professional storage of collection items was created within the internally prepared "Summary Report on the Status of the STM's Collection Storages" and the subsequent "Proposal for Optimisation of Professional Permanent Storage of Collections in the Administration of the Slovak Technical Museum" in 2013. Basically, it was a "loud cry" by the museum's professional staff, who would every year receive information about the non-existent support of the STM's intentions regarding the reconstruction and adaptation of 2 buildings in one of the STM branches (intention: "Large - scale collection storage and conservation workshops at the STM-Aviation Museum in Košice"). This intention was being repeatedly submitted to the Ministry of Culture of the Slovak Republic from 2008 to 2017 and would repeatedly remain "deeply below the line - unnoticed" - despite the priorities of the Museum and Gallery Development Strategy 2013 - 2018 and its separate goal in the field of "Permanent Professional Storage of Collection Items" (https://www.culture.gov.sk/wp-content/uploads/2019/12/Komplexna_sprava_o_stave_realizacie_Strategie_rozvoja_muzei_a_galerii_v_SR_2013-2018.pdf, Trvalé odborné uloženie zbierkových predmetov (Permanent Professional Storage of Collection Items), goal 2.12, p. 7 - 8), despite the Strategy for the Development of Culture for the years 2014-2020 and its settings in the strategic area 2: Preservation and Accessibility of Cultural Heritage (http://www.strategiakultury.sk/sites/default/files/STRATEGIA_ROZVOJA_KULTURY_SR_NA_ROKY_2014-2020.pdf?, Priority a opatrenia (Priorities and Measures), p. 19)...

In 2020, the STM was for storage purposes still using premises in **7 localities and 11 buildings**, specifically in Košice (3 localities, of which 1 building in long-term lease: hall storage "Printers"), Bratislava, Budimír, Prešov-Solivar, Spišská Belá. **The collection items were stored in 39 storages**, which did not meet the standards of premises for permanent professional storage of museum collection items. The problem is also (for logical reasons) the cumulation of cu-

rator and custodian jobs, and thus the unacceptable duty loading of curators by the administration of collection storages (the "record" is 7 storages managed by 1 curator located in various buildings ...). Due to insufficient space capacity suitable for the storage of large collection items or collection items requiring special microclimatic conditions, joint collection storages are no exception. In most cases, collection storages are equipped only with the equipment that is necessary for storage, there is no handling equipment, devices for monitoring microclimatic conditions, etc. At the same time, approximately 75% of the collection items managed by the STM are stored in the storage premises.

Persisting problems, especially with the capacity of collection storages, material and technical equipment, including monitoring equipment, as well as techniques for optimising microclimatic conditions, were significantly **worsened by the reduction of the storage area by the construction of the Science and Technology Centre for Children and Youth at Hlavná 90 street in Košice in 2012-2013.** The implementation of the project Science and Technology centre for Children and Youth required the cancellation of 6 collection storages. The collection items were moved to the existing storages and 4 newly allocated premises. However, it was again an unsuitable place for access (e.g., 1st underground floor), layout, as well as microclimatic conditions.

Tab. 3 Summary of characteristics of the STM's collection storages within the internal report on the state of storages in 2013 - on the example of "storage in the locality of the STM headquarters, Košice"

Collection storage	area m²	number of CI	free capacity%	heating	microclimate conditions monitoring		protection of premises			material %						
					hygrometer	thermometer	EPS	PSN	other	metal	Wood	Textile	Paper	Stone or glass	plastic	celluloid
Storage STM-Hl 88-Mining	30	205	10	yes	yes	yes	no	no	no	25	25	15	20	15		
Storage STM-Hl 88-Mining1	12,5	201	90	yes	no	no	no	no	no						100	
Storage STM-Hl 88-Machine engineering	19	90	5	yes	no	no	yes	yes	no		10		90			
Storage STM-Hl 86-Photo-cinema	22	1300	5	yes	yes	no	yes	no	yes		55	2			30	7
Storage STM-Hl 86-Metallurgy	26	2370	20	yes	yes	yes	yes	no	no	80	3		10		7	
Storage STM-Hl 86-Machine engineering	45	125	10	yes	no	no	yes	no	yes	75	10		15			
Storage STM-Hl 86-Chemistry	23	349	10	yes	no	no	no	no	yes		45	20	5		15	
Storage STM-Hl 90-Water management, construction industry	22	280	0	no	no	no	no	no	no		5	10		85		
Storage STM-Hl 88/AB-Watchmaking	15	310	10	yes	no	no	no	no	no	30	65				3	2
Storage STM-Hl 88/AB-Astronomy	9	190	30	yes	no	no	no	no	no		35	20	35		10	
Storage STM-Hl 88/AB-Industrial design	15	150	0	yes	no	no	no	no	no	55	5		10		30	
Storage STM-Hl 88/AB-Physics	18	166	20	yes	no	no	no	no	no	55	20	5	5		5	
Storage STM-Hl 88/TLA-Electrical engineering	85	938	3	no	no	no	no	no	no	40	45	5		5	5	
Storage STM-Hl 88/TLA-Hu, Fy, Ko, Po, E, R, Str. Combined storage	312	60	5	no	no	no	no	no	no	75	15	5			5	
Storage STM-Hl 88/TLA-Str, Ks, Po	100	274	5	no	no	no	no	no	no	80	10	5				
Storage STM-Hl 88/TLA-Industrial design	15	25	10	no	no	no	no	no	no	50	10	5	20		15	
Storage STM-Mas/Geodesy	10	109	0	no	no	no	no	no	no	40	40		10	3	5	
Storage STM-Mas/Blacksmithing	32	641	40	no	no	no	no	no	no	70	15	7	5	3		
Storage STM-Tim/Geodesy	9	54	40	no	no	no	no	yes	no	40	40	10				
Storage STM-Tim/Blacksmithing	28	887	25	no	no	no	no	yes	no	70	15	10				
Storage STM-Tim/Machine engineering + Energetics + Office machines	28	162	40	no	no	no	no	yes	yes	95	5					
Storage STM-Tim/Physics	18	783	10	no	no	no	no	yes	no	30	20	5	20		10	
Storage STM-Tim/Chemistry1	21	152	0	no	no	no	no	yes	no	50	20	5			20	
Storage STM-Tim/Chemistry2	13	159	10	no	no	no	no	yes	no	50	10		5	20	15	

The following types of premises have been used for storage purposes in the STM for a long time:

- closed offices (originally administrative premises) currently in visitor access zones,
- the "Printers" hall (522 m2 / 477 m2 usable, annual rental costs EUR 20.256),
- cellars,
- other areas.

We have evaluated the following situations as acute:

1. the "Printers" hall

- unsuitable microclimatic conditions,
- unsuitable construction and layout of the building (skylights, supporting columns, the only large entrance from the museum courtyard),
- high financial rental costs compared to the current conditions and the condition of the building,
- poor condition of the building (care by the owner is also limited by improper storage of collection items),
- non-perspective of solving ownership relations to the hall object of the "Printers" hall;

2. collection storages in cellars

- absolutely unsuitable due to water distribution, waste water and their condition (repeated accidents), poor access and inability to deal with temperature / humidity parameters (repeated mouldings, etc.);

3. collection storages in the visitor access zone

- security, poor access, layout of premises.

The decisive starter for intensive action in this matter in 2018 and 2019 for the STM was the repeated flooding of the cellar storage of the Metallurgical Collection and the events of significant damage to rare collection items. at the same time the situation in the so-called "Printers" hall was no longer acceptable.

Flooding of the collection storage in the basement with waste water, 30/05/2018

The state of the basement storage of the blacksmithing collection, March 2021

The state of the so-called Printers' hall, 13/02/2018

In 2018, the STM changed its strategy towards its establishing authority and changed the million-dollar project of the reconstruction of its own facilities in the STM branch of the Aviation Museum in Košice into a collection storage for the purpose of renting hall premises of sufficient quality at a reasonable rental price.

Since 17 December 2019, the STM has been implementing the project "Establishment of a Central Collection Storage" in a rented hall within easy reach from the STM headquarters (10 min. by car, 30 min. by public transport, 60 min. on foot). The built-up area of the hall and the adjoining courtyard is 2,162 m^2, the usable area for storing collections is, with a good organisation of storage space, approx. 1,300 m^2 in shelving systems + 650 m^2 of free space.

The building of the former wholesale and retail store of gardening supplies, leased by the STM from 17/12/2019 for the purpose of the central collection storage
– exterior above, interior below

As the STM entered the project with a budget of 89,500 EUR for the adaptation of the hall space into a collection storage and 0 EUR for operating costs (annual rent 103 680 EUR + additional energy costs, additional fees and routine maintenance together with an estimated approx. 120 000 EUR / year) and without the possibility of buying the hall into state ownership, it proceeded to very cautious equipment solutions.

Within the adaptation, we focused on:

1. necessary renovation of the premises (leaking skylights, disabling/covering construction holes connecting the building with other buildings and surfaces, air conditioning and heat pump system, land fencing – all under the direction of the building owner);

2. security of the building (EZS, connection to PCO PZ SR, revision of fire prevention measures);

3. equipment with storage furniture (shelving system, archive cabinets, hanging system);

4. equipment with techniques for handling collection items;

5. provision of packaging materials for transport and storing;

6. providing a system for effective registration of the movement/location of collection items.

Moreover, we counted on the use of external services for the handling and transport of extremely large collection items (part-time workers and moving companies).

Tab. 3 Plan and reality: adaptation to the STM central collection storage

	Purpose	Price estimate in EUR with VAT	Actual expenses	
1.	**Renovation of the building**	**0**	**0**	note: the landlord at his own expense carried out repairs to skylights, etc.
2.	**Security protection** in that: EZS camera system	**6 012** 5 162 850	**9 010** 4 684 553 885 2 758 130	EZS and connection PCO PZ SR cameras telecommunications + Wi-Fi + backup source Electro revision Fire protection revision
3.	**Furnishings** In that: metal shelving system furniture for 2D objects (drawing cabinets) hanging furniture	**22 245** 15 095 6 500 650	**15 015** 840 3022 1 460 5 182 1 925 2 586	revision of an existing shelving system adaptation elements of the shelving system elements on the suspension system archive cabinets packing material for storage of ZP (archive boxes, etc.) other equipment (connectors, equipment for facilities, tools, ladders ...) + transport costs
4.	**Handling equipment** In that: rudder (400 kg) pallet truck (2500 kg) manual forklift (up to 3 m, 1,500 kg for uneven surfaces + platform) manual stacker (up to 1.5 m, 400 kg) folding platform truck (150 kg) hand truck with rubber wheels (700 kg) + truck trailer (also used) + motor forklift (also used)	**22 885** 120 300 980 600 40 830	**15 518** 6 480 5 388 2 075 970 255 350	motor forklift - new sidecar pallet truck + storage truck + lifting table + rudder manual forklift pallet truck ... operation trainings
5.	**Collection items marking technology** in that: Establishment of Wi-Fi in the storage building Client workplace Tagging workplace RFID chips with carriers (10,000 ZP) Training	**19 230** 200 3 390 9 840 4 800 1 200	**20 039** 4 030 7 554 7 255 1200	Mobile client workplace Tagging workplace Consumables (designation of 10,000 items) Training courses
6.	**Transport of collection items** handling and transport, estimated 168 hours	**min. 2 400**	**0**	
			3 900	cleaning car + vacuum cleaner
	Overall:	**72 782**	**63 482**	

Within the security of the STM Central Collection Storage building, we set up an Electronic Security System (EZS), including outdoor and indoor cameras with access to the STM employees' mobile phones, and connection of the building to the centralised security desk (PCO) of the Slovak Police. Part of the connection to the PCO, the condition is to have a "solo metallic telephone line set up (DSL line meets the condition)". Due to the non-existent infrastructure of Telekom in the location of the Central Collection Storage building, this could

not be met (prospectively 1 year). However, a solution was found in setting up a mobile line. At the same time, revisions of the existing electrical installation and electrical equipment were being done, as well as revisions of the existing fire-fighting equipment (hydrants) and processing of documentation within the framework of fire protection, as well as internet connection solutions. It took almost 9 months from the realisation of all the above-mentioned matters to the successful connection to the PCO. This was because of the Covid-19 pandemic and also the unexpected problems of combining the use of existing systems and connections with new elements!

As for the **equipment of storage furniture** in our particular case, there was an original shelving system in the hall. A sensible solution in our understanding and our situation (finances, circumstances of the Covid pandemic, interconnection of the existing shelving system with lighting, and especially time) was to ensure a revision of the existing system, from which came clear conditions for its further use for our purposes. However, we made several adjustments ourselves, from the change of layout mainly to adapt the space for the use of handling equipment, increase the free space for storing oversized collection items, production of new shelves (almost 700 pieces, the originals were made of trapezoidal sheet metal), etc. In any case, in the future we plan to provide a modern shelving system by sectors. At the same time, however, part of the furniture from the cancelled collection storages was used in the newly established central storage (cabinets for storing small parts of photographic equipment

and movie libraries, drawer cabinets for storing auxiliary paper documents, metal shelves) and so-called curry mats, with a surface treatment fitted into the frames, were adapted for storage in the form of hanging (clocks, paintings).

The necessity of **handling technology** in connection with the specifics of our collection items was confirmed by the situations in 2014/2015 during photo shooting of our museum's collection items within the Digital Museum project, when many critical situations arose during a very intensive relocation of a large number of collection items. Until 2020, the STM had 1 rudder with a load capacity of 300 kg, 1 electric forklift truck with a load capacity of 1.5 t, 2 handling trucks with a load capacity of 250 kg, 1 Ford Transit truck. In order to effectively manage the transport of collection items from the cancelled storages at the STM headquarters to the newly established Central Collection Storage, the STM handling technology has grown by: diesel forklift (max. load capacity 3.5 t; compli-

ance with the layout conditions of the STM premises was problematic), rudder (up to 400 kg), pallet truck with digital weight (up to 2 t), storage truck (up to 500 kg), manual lifting table (up to 680 kg), manual forklift (lift up to 3 m, load capacity 1 t).

In the process of adapting the hall premises to the museum collection storage, the need for **more efficient cleaning** became apparent, which we solved by procuring a floor washing machine and a multifunctional vacuum cleaner.

However, I consider the **settings of the issue of relocation of collection items** to be the most decisive. During professional revisions of the collection fund, we have long been struggling with serious problems in identifying collection items with professional records, at the same time the processes of recording location changes take an unnecessarily long time and, last but not least, are marked by a number of human errors. At the same time, the processes of recording location changes take an unnecessarily long time and are marked by a number of human errors.

The project of establishing a central collection storage was finally an accepted opportunity to apply technology to make the selected issues of professions collection management more effective in the STM. Already in the years 2009 and 2010 we were aware of the results of a pilot project implemented at the Slovak National Museum - Museum of Jewish Culture in Bratislava focused on the use of RFID technologies in marking collection items and then in monitoring and recording their movement. In the current conditions of the STM (especially the connection with finances, space, time) we have chosen the following approach:

- partial professional revisions of collections, whose collection items are intended for removal, will take place continuously (obligation of extraordinary professional revision upon transfer to another collection storage according to §11 paragraph 2b of the Museum Act)

- the inspection of the collection item will take place at the exit from the cancelled storage and subsequently also at the entrance to the new storage and the collection item will be placed immediately in a reserved place in the new storage with immediate registration of the location (location plan)

- we will provide RFID technology and we will use part of the functionalities of the "collection storage module" in ESEZ 4G (since the STM implements professional records in this IS)

- without exception, all downloaded collection items will be marked in advance

In the 1st stage, that is before the transport of the collection items, we procured RFID technology, consisting of equipment that takes into account our needs, namely:

1. <u>Mobile client workplace</u>, consisting of

- handheld RFID and 2D barcode readers with accessories (2 readers),

- RFID Client Module software - unlimited license, including installation and configuration in the STM,

2. <u>Tagging (labelling) workplace</u>, consisting of

- 1 RFID chip encoded label printer

- 1 small desktop label printer + coding RFID antenna to the USB port of the laptop for individual labels + laptop (due to the possibility of working in directly in the storage),

- software for communication with ESEZ and print formatting - unlimited license for the STM, everything including installation and configuration (configuration of both printers, USB antennas, software),

3. <u>Consumables for marking 10,000 pieces of collection items</u>

- RFID chips large with carriers - the carrier is a self-adhesive label in a roll,

- RFID chips medium with carriers - the carrier is a self-adhesive label in a roll,

- PVC tags with holes (small and medium),

- thermal transfer ribbon for the printer, width 110mm, for a large RFID printer,

- thermal transfer ribbon for the printer, width 60mm, for a small printer.

At the same time, together with ESEZ 4G operator, we dealt with the settings and adjustments of the rights of the existing IS clients from the ranks of curators, documentarians and custodians of the STM. For the efficient running of all processes, we have assigned **"tagger"** rights to 1 of the documentarians. Within the scope of rights for work in the museum cataloguing system he/she has complete visitor rights and <u>the ability to create RFID tags for 2nd degree records and add tagging information to the records.</u> The rights to enter data into the car - Item Management/Permanent Placement - were assigned to the Custodian of the Central Collection Storage, who, within the user rights in the museum cataloguing system, acquired <u>the possibility to add information on temporary or permanent storage to 1st and 2nd degree</u>

records regardless of the rights to the records (possibility of a collective regis-
tration of storage).

At the same time, the preparation of the designation of the Central Col-
lection Storage's storage areas was very important. After the final adaptation
of shelving systems, the so-called free storage areas, archive cabinets and
surveying of the entire storage, we created a **"Location Tree" with 941 lo-
cations of precise identification of the storage location** (shelves/racks,
drawers, free storage zones, hanging systems).

Preparations for moving in the Central
Collection Storage - the STM's curators and
custodians, cleaning, January 2020

Self-help modification of the shelving system
according to the parameters of collection

Self-help modification of storage areas of the
shelving system

RFID processes of tagging collection items
before moving

Problems During the Realisation

Massive relocation at the time of the Coronavirus Crisis - anti-pandemic measures in various strict settings during 2020 fundamentally affected the entire realisation. It was completely impossible in our conditions to use **part-time workers**, whom we counted on to help the curators of the collections in preparation for the transport of collection items (assistance in tagging collection items with RFID tags and packing + loading in the cancelled storage and unloading in the new storage), also **external moving services**. It was not only about limiting meetings with people outside the permanent team, but also about the constant risk of non-compliance with time schedules on our part. The only solution was to carry out the moving on our own, which required a huge amount of physical strain for the entire STM team. During the months of June to December, 3,470 pieces of collection items were moved to the newly established storage. I emphasise that a part consists of oversized collection items with a weight of individual parts of up to 400 kg.

Due to the unusual situation, we also had to abandon the originally planned way of treating collection items. We counted on the close cooperation of a 3-member team of conservators, who were to review the actual condition of all collection items selected for transport and to **provide preventive conservation interventions** for these items. In connection with the repeated prevention of performance at workplaces and their involvement in the processes of adaptation of the new collection storage space and the use of their physical strength in the transport of collection items, conservation interventions were provided only for collection items that were evaluated by curators as necessary.

A separate problem is the situation of **adaptation of the premises of the originally commercial-warehouse building to the museum collection storage**. Adaptation of the existing shelving system for our purposes meant changes in the layout of shelves (height and distance of shelves depending on the dimensions of collection items), cancellation of selected shelving systems to ensure the possibility of moving handling equipment in the storage, completion of shelf surfaces with unwanted material and finally the fulfilment of the conditions set by the revision of the shelving system by a professionally qualified person.

A significant **problem in planning the layout of the shelving system** was the insufficiently or erroneously processed dimensional parameters of the collection items in the cataloguing records. Although we have anticipated such

situations, their accumulation causes considerable time slippage and disrupts the entire relocation plan. **Once again it was confirmed that comprehensively and relevantly processed data on the physical attributes of collection items are a necessity.**
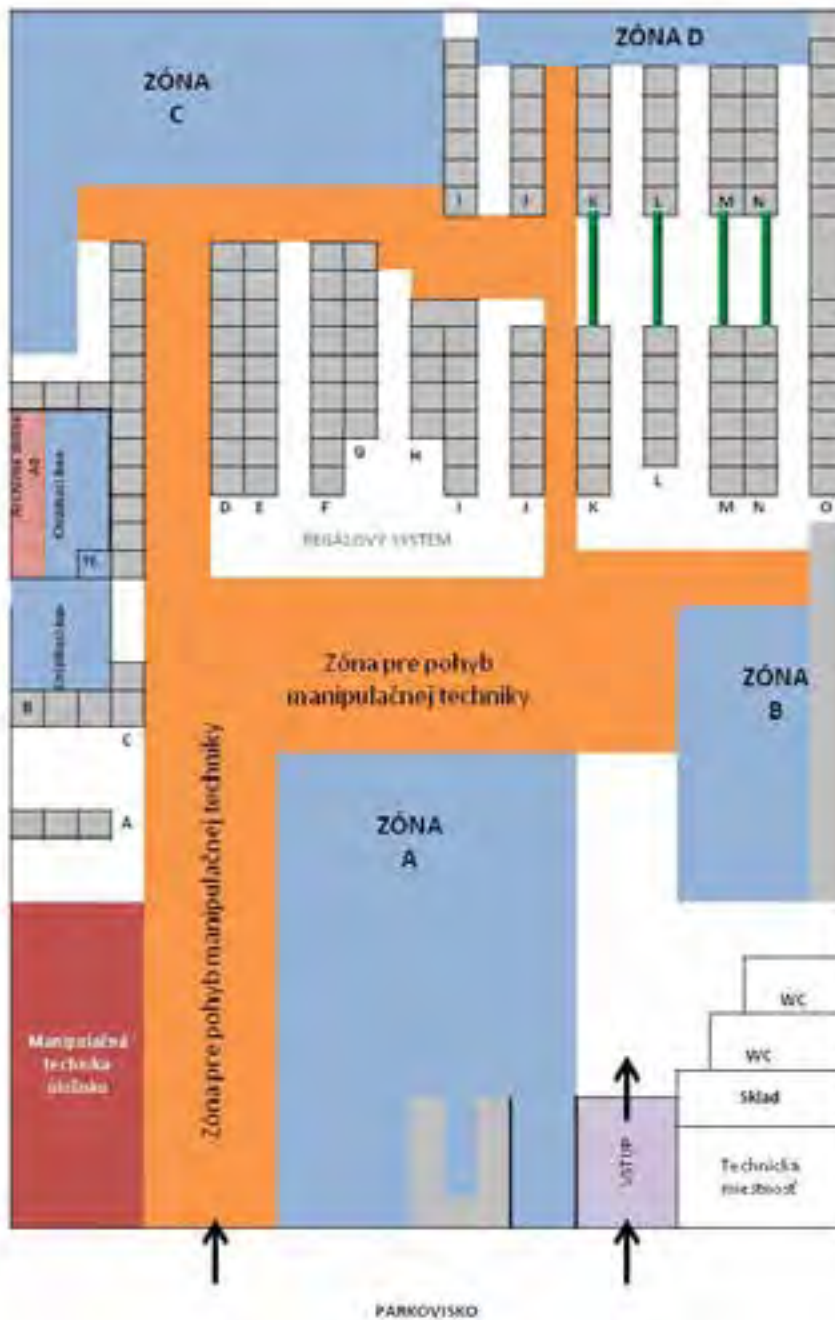
Layout of the STM's Central Collection Storage (draft of the layout)

"For a Better Tomorrow"

The STM project, named as "Establishment of the Central Collection Storage", cannot be considered a model at all, let alone an example of good practice. For the STM, it is a way out of an emergency in a situation, as I mentioned, which had long exceeded a critical point. It is a choice of lesser evil, in this case for collectibles and their administrator.

In any case, with this project the STM has:

1. abolished the most critical unsuitable collection storages (the so-called Printers' hall, selected storages in the zones with visitor access, and in 2021 the relocation and abolition of the so-called cellar storages still continues), which in particular:

- significantly reduces the progression/speed of degradation of collection items,
- facilitates access to, and handling of, collection items,
- visually clarifies the contents of the collection, etc.

2. introduced a reasonable form of marking collection items in order to automatise selected processes of professional collection management, which in particular:

- eliminates error in the identification of the collection item (common problem),
- makes the peer review process more effective (significant time saving for the members of revision committees),
- makes the process of recording data about the movement of collection objects more effective (automatises) (so far, the data about permanent placement in the Central Collection Storage)
- makes the work of curators more effective and creates more time for scientific research or creative work (the case of the STM: cumulated position of a curator and custodian, and a large number of dislocated storages).

A glimpse into the shut-down storage of the so-called Printers' hall
after the removal of collection items, 18/12/2020

Transportation of collection items to the STM's newly established Central Collection Storage

The process of collection items storing and automated recording of the mandatory data „Location/Permanent Storage" in the museum cataloguing system ESEZ 4G

We are far from approaching the standards of professional storage of collection items, our situation and the solutions we have decided on in an emergency do not allow, for instance, storage of collection items according to materials. However, we leave the "bad" and in the motto "focus on what is really possible" we move forward for the better.

As for the microclimatic parameters in the newly established central collection storage, we can eliminate the effect of light, and in temperature and humidity we can move within the recommended limits for metal and wood materials, which are the vast majority of the materials in the storage. In 2021, we are urgently continuing to transport collection items from cellars, removing collection items of an archival nature and items from selected non-tempered storages from the STM-Museum of Aviation in Košice.

We are counting on the gradual introduction of RFID tagging of all collection items and the gradual introduction of the system in all collection storages of the STM. The initial investment in RFID technology for our purposes cost us 20,000 EUR. From now on, we will only invest in the purchase of consumables (labels with chips, tags and ribbons for printers). Tagging 1 collection item currently costs about 70 cents, which is less than a negligible expense compared to the benefit!

For the STM Central Collection Storage we are also considering the purchase of a system for automatic monitoring of climatic parameters and reso-

lution of RFID gates to monitor the movement of persons. This way we would be able to automatise almost all administrative activities of the storage administration - from the "Book of Entries and Exits", through the "Book of Measurements", up to the records of the movement of collection items.

The generous existing setup of the building's background (offices, kitchen, toilets, showers, cloakroom), in which we have set up the Central Collection Storage, offers ready-made space for the all-day work of curators. In the future, it can also possibly offer a research space and a small conservation workplace for simple selected interventions of professional treatment of collection items. After the moving is complete, we do not rule out the occasional opening of the collection storage to the general public.
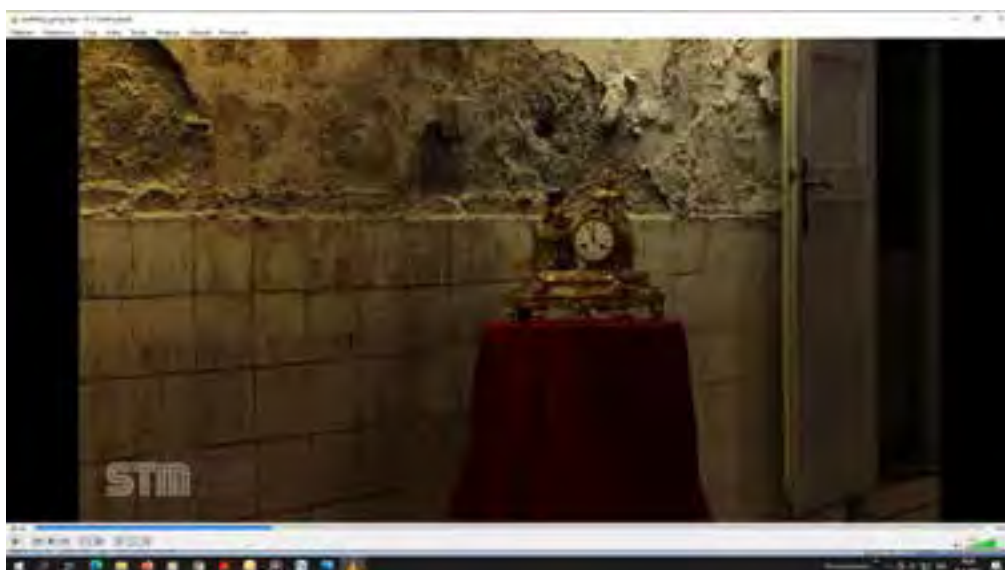
Symbolic end of one stage of the „Establishment of the STM's Central Collection Storage" project - the last collection item moved out of one of the unsuitable storages of the STM on 18/12/2020

Management Modernisation of Museum Collections in the Collection Storage

Andrea Demeterová

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Evaluation and systematisation of a museum collection is the main goal of professional museum work. We would not be able to identify its value without information, knowledge and systematisation of the collection. The value of museum collection depends on availability and accessibility of the information.

Methodological and technological development has affected areas of museum collection management. Our museum participated in a pilot project of informatisation of collection storage management 12 years ago. The project was carried out by CEMUZ (Central Evidence of Museum Collection) of The Slovak National Museum under the management of the project's author Mgr. Ján Jurkovič.

The aim of the project was to verify and adjust the functions, and to include a new programme module of knowledge system of museums in Slovakia, known as ESEZ 4G (Electronic Processing of Museum Collections of the 4th generation). The new module was called "Depozitár" (collection storage) and was integrated with the categorisation module, unified thesaurus of museums and a portal which evaluated all activities of the whole system.

As we know, RFID technology is commonly used in logistics, but also in shops on daily basis. The "Depozitár" module is used very rarely in the Slovak museums even 12 years after it was made available for free. Lack of awareness of museum workers may be the reason, therefore, I would like to use this opportunity to tell you more about its purpose and main functions.

It is a programme application of radio frequency technology for identification of items, adapted to the needs of professional management of museum collection items. It is integrated with the categorisation module and functionally completes ESEZ 4G system. Its principle is contactless identification of the

electrical code and connection with data in the categorisation module ESEZ 4G. RFID chips, the device to receive RFID signal and the software enabling communication with ESEZ 4G, are the essential technological components.

RFID chip – also called as "tag", consists of a chip (in the size of a poppy grain) and the aerial on transparent self-adhesive foil. The chip contains data that identifies the object to which the identifier is connected. These are identification data about an item downloaded from ESEZ 4G (incremental and registration number, name of the item, place of storage, image preview and the date of last revision ...).

Three types of tags were used in the pilot project. They have low production costs, good readability and relatively high durability.

1. tag for application for metal items
2. tag for application for stackable items (items that can be placed on top of each other)
3. universal tag for all other items

Registration number of the item, together with 2D barcode, is printed on all tags for easy identification with the naked eye.

Modern collection management system solves:

1. automatisation of objects search / automatisation of object identification

    a. reading devices are able to find a selected item within a distance of several meters, or identify all of the items which are within its wavelength range
    b. the display shows both text and image data from the categorisation module ESEZ 4G

2. automatisation of the management of the collection storage diary and records of loans

    a. checks the eligibility of entry into the collection storage
    b. records the entry and departure of persons into and from the collection storage
    c. registers the removal of an item from the collection storage and its return (it gives the time and the name of the person who went through the door of the collection storage with the item)
    d. automatically prepares documents for loan

These functions are provided by the system's mobile and fixed terminals. The technical components are as follows:

RFID portable reader is designed for mobile manipulation. Its weight and dimensions are suitable for holding in one hand, it has wireless access to the Internet and has its own power source (battery). It is able to identify an object via RFID tag and then display it with a description. After entering an object's registration number, the reader will make an audible signal, meaning the searched object is within the range and we can assign the object to a specified location. The portable reader consists of several modules that are connected into one device: portable computer, RFID control unit, RFID antenna, 2D barcode reader, touchscreen and other components such as battery, Wi-Fi …

RFID gate is a stationary reading device, located in front of the entrance to the collection storage and is connected to ESEZ 4G cataloguing module. It consists of control unit - is a source of radio frequency energy and it carries out commands, such as reading and writing tags; antennas – they serve as a source of RF transmission; optical sensors – they determine the direction of a person crossing the gate and provide information about the crossing itself; control computer – manages the control unit and optical sensors (it also transcodes the read value of

a tag, temporarily stores information about gate crossings, their entry in ESEZ 4G system and is able to report failure of any part of the gate); support devices - UPS power supply, network switch. The RFID gate detects each pass of a tag and automatically records the passage of people. It also detects and records a tagged item's entry or exit from the collection storage. Untagged crossing through the gate is identified by the system as unauthorised and triggers an alarm. So, it is not possible to enter the collection storage premises without the system noticing. Authorised persons have their identification cards with an RFID tag. The system detects their entrance as authorised and records their entry and exit in the digital collection storage diary. Authorisation can be defined in the system according to the collection storage management of the museum. The system triggers an alarm and notifies the responsible persons, in the case of unauthorised event, by a text message or an e-mail. Alternatively, it can be connected to the central security desk and the camera system installed in the museum.

The "Depository" module is integrated with ESEZ 4G cataloguing module. Data about persons' movement and identification of persons who have manipulated with an item are registered (with the requirement of the system to add the purpose). This way, the accurate digital collection storage diary, that meets legislative requirements, is generated. It is not possible to make any unauthorised additional changes to the detected data by editing (person's name, time, identified movement of persons and objects in relation to the object as of the given date). These events are generated through the applied RFID technology and they become part of the documentation of museum collections. Additional data (reason for entry, reason for relocation of an item, subject to which the object is loaned ...) depends on a specific situation and consistency of the internal regulations of the museum's collection storage management.

The main premise for the use of RFID technology is the use of ESEZ 4G cataloguing module. Protection is not the primary function of RFID technology. It clarifies the management of museum collections, simplifies revisions, eliminates human error, can identify irregularities and saves time. In museum practice, this means fast search in the large amount of stored documentation material, reliable object identification, automatic monitoring of the movement of an object, as well as persons in the collection storage. The transition to an automated collection storage system is done together with an in-depth revision

- by adding data into the system. Each collection item goes through the hands of a curator and a custodian.

RFID chip technology and its utilisation brings a whole new dimension for the museum industry. If this technology is fully applied in practice, it would mean an improvement of the management of museum collections.

The Use of RFID in the Conditions of the Museum of Folk Art Production ÚĽUV

Libuša Jaďuďová

The Centre for Folk Art Production, Slovakia

Paper: *The use of RFID in the Conditions of the Museum of Folk Art Production* represents the use and functioning of the radio frequency identification when working with museum collection items.

The Centre for Folk Art Production (Ústredie ľudovej umeleckej výroby, hereinafter "ÚĽUV") is responsible, as a national cultural institution with nationwide scope, for continuity in the preservation of knowledge, skills, cultural and aesthetic values represented by live crafts and folk art productions. By harmonising the processes of educational, library, publishing, museum and exhibition practice with the care of folk art production, and by and the sale of folk art products, it creates an effective system of protection and development of folk art production. The headquarters of folk art production is in accordance with the law (Act No. 4/1958 Coll. SNR on folk art production and arts and crafts) institutional performer of the protection and development of folk art production as a component of the national cultural heritage. Currently, ÚĽUV is a contributory organisation of the Ministry of Culture of the Slovak Republic.[1]

In 2019, ÚĽUV established[2] the Museum of Folk Art Production (Múzeum ľudovej umeleckej výroby, hereinafter referred to as the "*MĽUV*") - an open collection storage of ÚĽUV, registered in the Register of Museums of the Slovak Republic under the registration number 96/2009, as a nationwide specialised museum focusing on museum documentation of the artistic expression of peo-

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1   ÚĽUV Annual Report for 2020. [cited on 16 July 2021]. Available on the Internet: http://www.uluv.sk/domain/flox/files/o-nas/povinne-info/uluv-vyrocna-sprava-2020.pdf

2   Within the organisational structure of ÚĽUV, the museum has the status of a special organisational unit. Although there is *"open collection storage"* in the name of the museum, the museum collection storage does not provide this function in terms of making it available to the general public.

ple, folk arts and crafts and domestic production. It maps the transformations and forms of folk art production from 1945 to the present and also documents the influence of the ÚĽUV organisation.

The MĽUV currently manages three funds - collection, documentation and working. The funds are based on objects obtained for the collection of samples (or even documentary collections) gradually from the 1950s from the traditional folk environment, during researches carried out especially in the first decades of the ÚĽUV's existence. The funds also include objects related to ÚĽUV's production activities and they document ÚĽUV's contribution to the development of aesthetically valuable manifestations of traditional craft production. In this area we can also include collection objects obtained from art-oriented design and craft competitions, announced by ÚĽUV („Kruhy na vode" – "Circles on Water"). Since 2010, the museum has carried out an independent acquisition activity; as of 31 December 2020, the total number of the museum's collection items was 23,913. The museum's collection fund consists of eight collections – textiles, wood, non-textile, ceramics, Circles on Water, samplers, coloured drawings, large decorations.[3]

Professional records of collections are kept in the cataloguing module ESEZ 4G (Elektronické spracovanie evidence zbierok - Electronic processing of records of collections).[4] The use of radio frequency identification (RFID technology) in the MĽUV concerns working with the collection fund - with collection items.

RFID technology allows machine identification based on radio waves, which means that this is possible even without direct visibility. An RFID tag (hereinafter "tag") consists of a chip, an antenna and is encapsulated in a durable package.[5]

Only one collection storage of the MĽUV was equipped with high-quality Foreg 2000 metal furniture in 2010 – it is a movable shelf; the items are stored

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3   Museum of Folk Art Production. [cited July 16, 2021]. Available on the Internet: http://www.uluv.sk/sk/web/kam-v-uluve/muzeum-luv/

4   It allows you to record and store information about collections in digital form. The recorded information can be searched (according to any criteria), corrected, deleted. The records are stored in the AipSafe digital archive, developed by AipSafe s.r.o. In addition to textual information about the collection, documents describing the collection item can be stored in the digital archive. Those can be, e.g., pictures, videos, tables, etc. The digital archive makes it possible to make the registered information available to a wide group of users working either in a local network or via the Internet. At the same time, the digital archive makes it possible to create various user groups for the matter of data protection, to whom it is possible to set specific rights for creating, viewing, editing and deleting data. ESEZ online help, [cited on July 16, 2021].

5   Digitalizácia III. Uplatnenie RFID v múzeu. Metodika digitalizácie múzejných zbierok (Digitisation III. Application of RFID in a Museum. Methodology of Digitisation of Museum Collections), Bratislava 2010, p. 5.

in three separately lockable boxes (picture. One unit consists of textiles - folk clothing, coloured drawings, fashion design, the other unit consists of textiles - home textiles, samplers (paper), woollen items, textile toys, blueprints, the third unit consists of ceramics, items made of natural materials (shuffles, wicker, splint), horn, leather, wood, metal, wire, glass (picture no. 1).

An RFID system was implemented at the MĽUV in 2011. The RFID system cooperates with the museum cataloguing module ESEZ 4G from EDICO. It is important to note that the RFID system is not a security element, but a record element - it offers a higher level of record keeping of items that have the RFID tags, whether it concerns the place of their permanent storage or transfer from the storage. The use of the RFID system in the management of collections is included in the museum's internal regulations (guidelines), which regulate the performance of certain professional activities. The technological part of RFID in the MĽUV consists of:

- gate,
- control system,
- camera system,
- temperature and humidity monitoring,
- backup system,
- rack (storage of control systems),
- mobile terminal for reading RFID tags and barcodes (RFID gun),
- tagging workplace,
- configuration of the entire system, connection to ESEZ 4G, to the information portal of museums, configuration and activation of the alarm functionality of the system (unauthorised passages, temperature and humidity).

RFID *gate*

The gate is located at the entrance to the corridor that leads to the collection storage. The gate consists of an RFID decoder, three antennas, motion sensors and an audible alarm, it detects the crossing of people and objects (picture no. 2 - 3).

The RFID gate has a frequent failure rate, which is also due to the fact that the construction of the surrounding walls transmits a signal (they are not shaded).

The hardware is related to the operation of the gate - it is located in the room next to the storage, where the entire tagging workplace is located. Good quality hardware components are essential for the operation of the entire gate, the operation of the camera, temperature and humidity sensor. At the time of the malfunction of the RFID gate system, we returned to the museum to keep handwritten/printed books of entries in the storage and measurements of climatic conditions.

The evaluation of crossings, camera footage, results from sensors were made for the MĽUV by EDICA so that everything is displayed on the portal *portal.cemuz.sk.*

RFID *camera system*

The camera is located above the entrance to the collection storage, pointed at the entrance into the corridor (picture no. 4). The camera takes pictures as a people pass through, but the pictures from it are often not in good quality. This is also affected by the fact that through the entrance door to the museum building, light shines through the open door into the corridor leading to the collection storage. So, when we go through the gate every time we open the door, behind which light penetrates through the main entrance door - the camera takes a picture, but its quality is affected by this brightness.

RFID *cards*

The first cards were created for the museum in 2011. The new cards we use now were created in March 2020 (picture no. 5). There is a total of 8 for the museum staff, 4 for visitors.[6] A card must be with a person when entering the collection storage - whether it is an employee or a visitor. Through the gate, the entry/exit is recorded on the portal via a signal sent by the card. This essentially serves as the Book of Entry into the collection storage. However, it happens that the system has evaluated an authorised entry as unauthorised. There may be several reasons for such an evaluation - one is, for example, not capturing the RFID signal of the entry card by the gate.

The cards have three categories and three levels of authorisation: *K1* - may bring and take out objects (custodian), *K2* - may enter the storage, but may not bring in or take out anything (curator), *K3* - may enter, but only accompanied by an employee (visitor).

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6   Production and delivery through the company EDICO

RFID *temperature and humidity monitoring*

Measurement intervals can be adjusted. We have a set measurement interval every 15 minutes in the museum. The values are averaged every day, the highest and lowest value for each day is recorded separately. Print the report on any day of the month in tabular form.

RFID *portable reading device*

A reader, scanner, scanning or tagging gun that is designed for mobile handling (picture no. 6). Its size and weight make it suitable for holding in one hand, it has its own energy source - battery, wireless internet access; in our museum it is via WiFi. The reader has a touch screen that allows you to enter commands using a pen or tapping your finger. At the beginning of the implementation of the system, there was one mobile terminal at the workplace. In 2018, we purchased a second pistol, which helped speed up and make work with collection management more effective, while two employees were able to work with the device. The device includes *Valaška Reader* software from EDICO, which provides a user interface for certain collection management tasks. However, we currently have a problem with the scanners, as one is malfunctioning due to the battery overheating during charging, the other has faulty software. The museum staff working with the system also use the mobile application of the ESEZ system.

RFID *tagging workplace*

In the museum we have created a so-called tagging workplace (picture no. 7) in the room, which is entered from the corridor leading to the collection storage. Our workplace is equipped with one PC with accessories, which is connected to the Internet. ESEZ 4G is installed in it. We have two stationary reading devices available, but only one PC, so only one curator, or another employee who has assigned tagger right, can do the tagging. The computer is connected to a reading device and a printer for labels, tickets, tags and RFID tags.

RFID *tags*

After acquiring objects of cultural value as collection objects into the museum's collection fund, the documentarian will create a chronological record of objects, and the curators of the collections will catalogue the objects. When the most complete record of a collection item with a digital image record is cre-

ated in ESEZ, a curator will start creating tags - labels for the items within the collections he/she manages.[7] Creating a label consists of coding the label and printing a barcode (image no. 8 - 13). Label processed in this way becomes a permanent and irreplaceable identifier of the collection item. The MĽUV has established, in its internal regulation, the procedure for creating labels within the cataloguing of collection objects - Directive no. 16/2019 Processing of Collection Items in the MĽUV.

RFID *tags use*

After creating a label - tag, the curator marks the collection items either alone or with a custodian. Marking of textile collections (image no. 14) - textile labels are sewn on the object, where the incremental and registration number is marked, and on this textile label a tag is shot using textile pliers - a plastic splint is threaded through the textile with a pull-out needle - in this case through the textile label.

Marking of materials other than textiles (picture no. 15) - depending on the object, the tag is either glued or made with a hole punch in the part of the tag where there is no chip hole and a silicone handle is threaded through it - with long or short binding and attaches to the object.

When working with the RFID system regarding the creation of tags, it is necessary to take into account the provision of all necessary materials (picture no. 16) - commodities such as tags, cover wrappers, tags with an RFID chip, types of tag holders for an item - silicone holders, gluing to a solid base.

RFID *from the point of view of museum users/staff*

Overall, we can evaluate the use of the entire RFID system in the museum as very beneficial. Even taking into account the occasional technical failure - whether only the *"package"* will be used in the museum to create tags - marking items - mobile scanner (reader, gun), printer or recording crossings through the RFID gate, camera system or temperature and humidity measurement - all contribute to improving the quality of collection management, automatisation of processes of registration and control of collection items, their search or revision is speeded up.

Employees who work with a tagging workplace (in the sense of the whole system for creating an RFID tag for an object) and with a mobile reading device:

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7 RFID identifier - numeric code, assigned to the object after its marking (radio frequency identifier, bar code)

- the curator of textile collections - overall assesses RFID positively, using a pistol to scan the permanent storage of ZP, revisions - faster than manual insertion into ESEZ,

- the curator of non-textile collections - easy handling and work with the pistol, identification of ZP through registration numbers - better control over the collections, help with revision,

- the custodian - RFID facilitates the search for ZP, speeds up the acquisition of basic information about an object without having to turn on the PC, monitoring inputs via the camera system (photo creation) and RFID cards, temperature and humidity monitoring.

- Possible disadvantages - problems with the pistol, sometimes it happens (e.g., during revisions) that the system does not manage to process the specified operations when the ZP is on, the renewal of technology is necessary.

- The input financial costs should be optimal with regard to the technical equipment that will be used continuously, indefinitely. Bear in mind that the museum without the support of the establishing authority may not have the funds to conclude the service contract (maintenance system) after the end of the warranty period, which could fundamentally affect the "operation" of the museum in the registration and processing of collections.

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http://www.uluv.sk/sk/web/kam-v-uluve/muzeum-luv/

ESEZ online help

Furniture in the MĽUV collection storage

Location of the RFID gate in MĽUV

Location of the RFID gate in MĽUV

RFID camera system in MĽUV
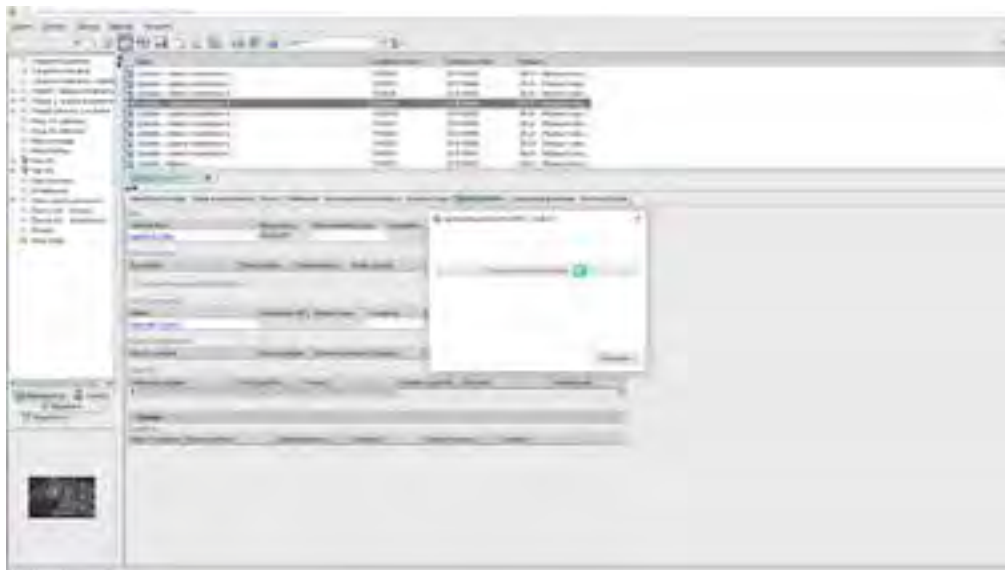

Entry cards

Reading device

Tagging workplace

Procedure for creating a tag in ESEZ 4G

Procedure for creating a tag in ESEZ 4G

Procedure for creating a tag in ESEZ 4G

Procedure for creating a tag in ESEZ 4G

Procedure for creating a tag in ESEZ 4G

Procedure for creating a tag in ESEZ 4G

Marking of an object from textile collections

Marking of an object from non-textile collections

Nylon grips - long or short tying, textile pliers - serve to cover the splint with textile,
hole puncher, splints

Modernisation programme of the Museum SNU collection protection and utilisation

Stanislav Mičev / Marian Uhrin

Museum of the Slovak National Uprising, Banská Bystrica

The Museum of the Slovak National Uprising has been located in a specialised museum building since 1969. In this year the museum introduced a timeless exhibition that was shortly replaced because of ideological reasons.

At that time, placing depositories in the building's basement appeared to be a good and modern idea. Unfortunately, the technological aspects were not sufficiently thought through and over time it became clear that this was, in fact, a bad idea due to dustiness and occurrence of electrical grids within the premises of the depository. Alas, the modernization of the depositories has not been addressed throughout the entire existence of the museum.

The current exhibition of the SNP Museum which was opened in 2004 is now far from meeting the requirements for a modern and expressive exhibition that is supposed to suppress extremism and at the same time emotionally affect the museum visitor. It resembles rather an exhibition depository than a museum exhibition.


In 2019 we created a multimedia exhibition that uses new modern presentation methods in order to inform about the meaninglessness of war. We created this exhibition with the intention that it will naturally connect with the open depository project and the visitor will get a comprehensive look at the anti-fascist resistance movement and the Slovak National Uprising both through the exhibits and through modern presentation methods.

A few years ago, we implemented a project in our museum called the Digital Museum thanks to which we created two specialized workplaces: the restoration and conservation workplace, and the digitization workplace. The project was funded by EU grants and the state budget.

All the mentioned activities are part of the long-term plan of the SNP museum to carry out a complete reconstruction of its premises, so that it meets the requirements of a modern cultural-heritage institution. The project idea is approved at the state level and we implement its particular stages gradually using resources outside the state budget.
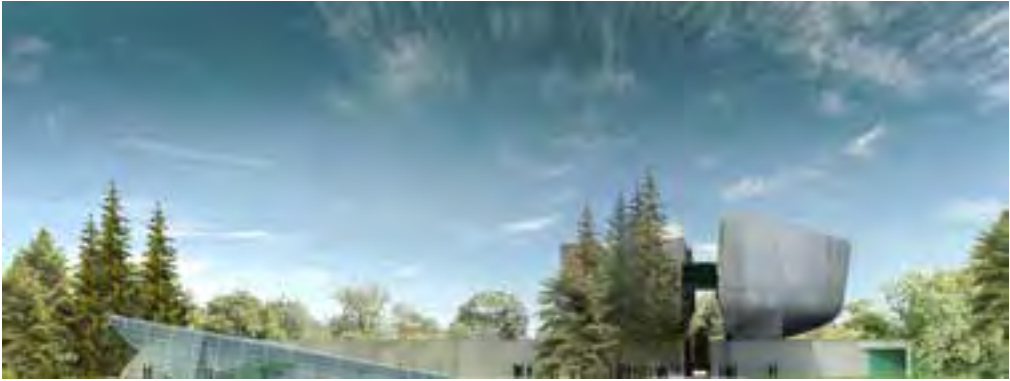
We would like to point out that the decision to build an open depository is not accidental. It is a targeted modernisation of the museum with individual implementation steps. The open depository should document the quality and quantity of the collection, our knowledge of it, as well as the care of the entrusted cultural heritage.

The aim is that everybody will find their place within the open depository: professionals in the study depository, students in education, and visitors in observing the work of a conservator or obtaining qualified information via a mobile application.

We assume that from the state budget we will also be able to build a classic depository for the collections' placement which will be stored in appropriate temperature and humidity conditions. The depositories will be divided according to material groups and will be connected to the open depository by air conditioning.

We do not limit the overall intention of the presentation of collection items to only the classical collection items. The SNP Museum also has an outdoor open-air exhibition of heavy combat equipment. These exhibits have been devalued by being displayed outdoors for over 50 years.
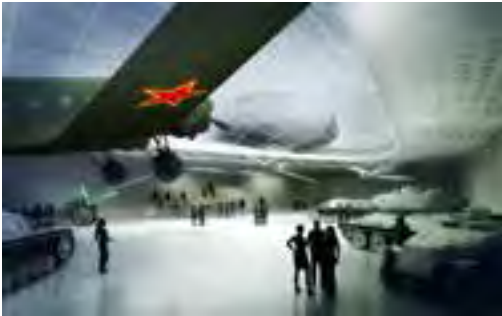
Apart from the Open Depository project, our goal is to create good-quality conditions for the storage and presentation of the heavy combat equipment. Our proposal is to create an underground exhibition with suitable conditions for these rare exhibits.

One of the exhibitions of the Museum of the Slovak National Uprising is situated outdoors in the museum's area. The outdoor exhibition has been formed gradually since 1959 when the first „heavy" exhibits entered the collections. With the continuously increasing numbers of these collection objects, they were placed in the premises of the city fortifications – Barbican – the headquarters of the SNP Museum at the time. The relocation of the SNP Museum to new specialised premises in 1969 meant a significant shift in the

institution's functioning, but the museum did not seem to know what to do with heavy military equipment. For many years the museum ceased any efforts for better placement and professional stewardship of these exhibits. Hence, it has held an outdoor exhibition - the „Open-Air Exhibition" in Banská Bystrica which has substituted a park in the city centre since 1969.

The collection objects have been exposed to weather since 1963. The lack of interest from the museum professional staff has only contributed to the poor condition of the collection objects. Additionally, more irreversible damage to the objects has been caused by lending the them for filmmaking, unprofessional interventions and pioneering speculations. Since the 1990s, the care of these collection items has been limited by the museum's insufficient funding.

Currently, the „Open-Air Exhibition" has on display 21 objects, from the Soviet Lisunov Li 2 transport aircraft, through Soviet and German armoured vehicles, Soviet, German and Czechoslovak cannons, to the wagons of the Štefánik and Hurban insurgent armoured trains. Most of these exhibits are relatively rare, not only in Slovakia but in Europe and worldwide as well. Naturally, among the most valuable exhibits are the weapons that can be proved to have been used during the Slovak National Uprising. In addition to the aforementioned cannons and armoured train wagons, it is mainly the light tank Lt vz.38 that we have chosen as a representative object documenting the past, current state and perspectives of the heavy weapons of the SNP Museum and their exhibition use.

Tank Lt vz.38 was invented in pre-war Czechoslovakia for its army. However, the political developments in Europe caused the entire Prague manufacture to start supplying Germany and its European allies. One of the allies was the Slovak army which during the war acquired 74 of the Lt vz.38 tanks. The army had 37 of them made and another 37 were second-hand bought from the Wehrmacht. In 1944, 27 of the Lt vz.38 tanks were used in the fights on the side of the insurgent army. After the uprising and the Second World War all these vehicles gradually ended up in scrap iron. Although the Czechoslovak army used a few dozens of these tanks after 1945, their fate was just as sad.

In 1963 the SNP Museum received one of the last Lt vz.38 tanks from the Czechoslovak Army. The tank was in a good condition, almost complete, running, only a small part of the inner equipment was missing. The tank awaited the fate of the other museum exhibits. Initially, it was exhibited in the „Barbican" area, and subsequently in the „Open-Air Exhibition" where it has been until this day. Over time, its condition has been impacted by the

unprofessional care of the museum staff, vandalism and, naturally, weather conditions. The current state of the tank is not ideal, many parts are missing and the object is damaged by corrosion.

The museum did not obtain any documentation when acquiring this object into the collection, and so for many years there was merely an assumption that it could have been an insurgent tank. Surely, the likelihood of such a thig was slim. Only in the recent years has this collection item been fully researched. The preliminary suggestion is that it is, indeed, one of the 37 Lt vz.38 tanks made for the Slovak army in the years 1940-1942. Moreover, it is very likely that this vehicle was used by the insurgent army.

It will be possible to confirm these hopeful findings during a comprehensive restoration of this collection object which should also foreshadow a perspective for this museum exhibition. Gradual and extensive works on the restoration of individual exhibits should result in their subsequent placement in a more suitable environment within a modern exhibition. These goals should foreshadow the efforts of the Museum of the Slovak National Uprising for its further development. These efforts should be focused on employing professionals capable of working on a wide range of the museum's collection items and creating modern and visitor-attractive exhibits that meet the standards of contemporary museums.

During the Second World War the Slovak Army acquired 74 Lt vz.38 tanks. 27 of them were used during the battles within the Slovak National Uprising.

Tank Lt vz.38 evid. no. V-3.023 during deployment within the Securing Division in Belarus, summer 1943. It is likely to be the tank located in the SNP Museum.

Tank Lt vz.38 at the time of the uprising. Battles of Kremnica, October 1944.

In 1963, the SNP Museum acquired the Lt vz.38 tank into its collections.

Tank Lt vz.38 as a collection item of the SNP Museum
on the site of the first installation.

Since 1969, the Lt vz.38 tank has been located in the open-air exhibition.

For 58 years the LT vz.38 tank has been placed outdoors. Weather conditions, vandalism and unprofessional care have caused damage to the collection object.

The current state of the Lt vz.38 tank forced the SNP Museum to come up with a radical solution - covering the exhibit.

The improper placement of the tank resulted in significant damage of the interior due to corrosion.

The SNP Museum aims to gradually restore the collection items in the "open-air exhibition" into their original state. In the case of some objects, including the Lt vz.38 tank, it could be a matter of bringing the vehicle into the running condition again. We can see similar efforts in other European museums as well.

The interior of the vehicle is restored almost to the last detail ...

Restored and running tank Lt vz.38 from the Military History Museum Lešany (Czech Republic)

The Concept of "Open Depository"
and its Place in Museum Terminology

Václav Rutar

National Technical Museum Prague, Czech Republic

In this article, I am trying to explain the term *"open depository"* and outline the work with it in the museum industry, or rather museology. I describe the term *"open depository"* in connection with the standard terms *"open storage"* and *"visible storage"*, using also the definition of *"open study centre"*. I also deal with the disputable term *"e-open storage"* and I also do not omit the so-called *"Wunderkammer"* or the *"cabinet of curiosities"*, the concept of which forms its own basis for the later development of the researched notion.

If we look at the term *"open depository"* and its use in museum terminology closely, we must begin with the standard description of the time scope of the musealisation tendency. These are, of course, the following three terms: selection – thesauration – presentation. I am putting aside the term selection – collection development activities. I will only mention it briefly in connection with historical musealisation approaches. Here, the thesauration means the final creation of a museum collection, of the information-documentation thesaurus. This takes place mainly in connection with the overall registration and systematization of the collection, possible restoration, conservation and preparation, it can also include the gradual documentation of collection items or deaccession, evaluation of the museum collection by eliminating selected items. Presentation as the third part of the musealisation cycle is usually a "presentation of the chosen", both in permanent and temporary exhibitions.

Selection - Thesauration | Presentation

↓

(presentation of the chosen – permanent/temporary exhibitions)

Hence, I place the term "open depository" within museum terminology in a different, new place. It is, once again, tied to the concept of thesauration, but located elsewhere on the musealisation axis. The place of presentation is no longer isolated, but closely connected with the visitor's look "behind the scenes" of the museum's work.

Selection – Thesauratio || Presentation

↓

Open depository

(…behind the scenes…)

When understanding the need for *"open-storages"*, it is necessary to look into history.

The models for modern *"open storages"* are – perhaps paradoxically – *"Wunderkammer"* or *"cabinets of curiosities"*, dating mainly to the 16th and 17th century.

Musaeum Franc. Calceolari, Verona (1584)

The objects were usually not directly organised, the non-systematic exhibition was mainly a presentation of objects acquired on the road and the purpose was to report on the exoticism and diversity of the world.

Museo Cospiano, Bologna (1677)

Gradually – based on several new publications as well – the term *Theatrum Mundi* began to appear in connection with them. One of the most notable museums of this kind is the Museum Wormiani, where it is possible to find some of the objects stored in the depository method, but still in the space of presentation.

Museum Wormiani, Kodaň (1655)

Museum Wormiani, Kodaň (1655), detail

In general – the main goal for this presentation is the opportunity to admire the objects, be in close contact with them and reveal the secrets of the world.

At the end of the 18th century, cabinets went out of fashion – the presentation of collection items gains order, they are used for science. New presentation techniques are associated with systematisation, practicality and, above all, explanation – the visitor should see the collections with respect and learn from them. The museum is no longer a source of discovery – collection items are beginning to be presented in clear systems. While in science museums there was a strong taxonomic (Linné) or historic (Darwin) take seen in these systems, the art museums focused more on the connection to schools, specific styles, and selected areas.

The objects became metonymic, the world is represented in a way chosen by the museum, the chosen system. As a result, the number of exhibited objects is still limited. Yes, museums have begun to evolve in their standard way of presentation into what they are today.

In the theory of museum presentation, the terms communication channel, thesaurus, expedient, message, recipient, contexts, noise, evaluation and feedback loop are usually interpreted in connection with this approach to presentation.

Communication channel

–

(thesaurus) Expedient – Message ↔ Recipient (contexts)

<div align="center">

↑   ↑

noise   noise

←feedback loop←←evaluation

</div>

In general – in early 19th century, museums already clearly determined what the visitor should pay attention to when visiting the exhibition.

During this period, increased attention was paid (and, of course, still logically is in the majority of museums!) especially to protection, research and education, as well as, in some respects, to the educational way of collection items presentation. This resulted in the work of museums starting to be understood in some cases as dogmatic, one-way, explaining social and cultural contexts according to clearly selected rules. Requirements for new educational programmes, new ways of collection development activities and new ways of presentation emerged. Participation in museum work was associated, among

other things, with the emergence of the so-called new museology. And among the demands for new ways of presentation, an old one appeared: the *"Wunderkammer"*. The core of the attention to this type of presentation, the *"old-new way"*, became the requirement to be able to exceed the limited understanding and knowledge of the museum collection depending on its part, which is displayed in the exhibition, showcased. Let me remind you a 2003 article by Peter van Mensch, in which he talks about the transition from a bipartite concept of exhibition work with a museum collection (exhibited and only prepared for presentation – reserved) to a tripartite model, where collections are already divided into exhibits stored in the depository and presented in the *"open depository"* (*"open-storage, visible storage"*).

In the search for the beginnings of modern *"Wunderkammer"*, the Museum of Anthropology at the University of British Columbia in Vancouver, where the concept of *"Open storage"* was introduced in 1976, is most often mentioned.

Museum of Anthropology, Vancouver (1976)

It is closely linked to the term *"democratisation"* used in the museology only recently – museum collections are perceived as the property of visitors having, logically, the right to see as much content as possible. Later, the so-called *"multiversities"*, i.e., diverse, various *"galleries"*, were formed in museums.

„Multiversity galleries" (Museum of Anthropology, Vancouver)

In 1982, the Strong Museum in Rochester was another institution adopting this method, since the 1990s we can already see a significant development of approaches, interpreted in the literature often under more or less the same meanings as *"open-storage"*, *"visible storage"* or *"open study centre"*. Let's envision several terms or phrases that most often appear in the interpretation of these terms and can therefore be used in creating appropriate definitions.

Behind the scenes – window to daily operations

One of the most common phrases used in the interpretation of the term *"open storage"* is a *"look behind the scenes"*, in Czech cultural environment more often used as *"look behind the curtain"*. Although this curtain is designed more as a presented exhibition/display, its direct overcoming can be understood as gaining insight into everyday museum work. Thus, for example, a new depository is being prepared at the Museum Boijmans van Beuningen in Rotterdam, which, however, will not be a so-called Black Box – the newly created building bears the name/designation Noah's Ark, suggesting a broader, overall, look into museum collections further connected to the work of conservators or photo laboratories. Noah's Ark becomes the city's main museum spot.

Museum Boijmans van Beuningen, Rotterdam – Noah's Ark (2021)

Museum Boijamans van Beuningen, Rotterdam – Noah's Ark (2021)

Ethic problem – protecting and preserving vs. sharing with the public

By far the most prevalent problem associated with the principles of *"open storage"* is the assessment of two possible approaches to the presentation of museum collections. Is the effort to preserve and protect collections or the need to share collections with the public, visitors, the primary goal?

Museums deciding to approach the presentation in an *"open storage"* have to solve several problems. It is, necessarily, also an issue of damaging objects with light, dust, moisture, etc. During the process of creating new presentations in this way, several solutions have emerged.

1. Insight into the depositories is allowed, but not entry

Victoria & Albert Museum, Londýn

1.

2. Collection items are not displayed freely, but in showcases, which can be supplemented by (computer, LCD) monitors with additional information, the so-called *"open storage facilities"*.

Metropolitan Museum of Modern Art, New York

This creates a type of exhibition that returns to the original *"Wunderkammer"*, but supplemented by new technical approaches.

L.A. County Museum of Art (LACMA), Los Angeles

3. The items exhibited are selected only depending on the type of material.

Schaudepot Vitra Laboratory, Weil nad Rýnem

4. The use of the *"rotating selection"* principle, a continuous exchange of collection items in exhibitions.

An endlessly changing cabinet of curiosities

This description of the possible form of *"open storage"* is associated with the ethical problem whether to *"exhibit or protect"* – in this case, the presented modern cabinet of curiosities does not lead directly to exhibiting as many objects as possible, of creating "permanent display of the depository", however, a continuously ongoing exchange of collection items is expected – the exhibition remains dynamic, a living body.

Hidden treasures

Among other things, the term also appears within the interpretation of the museum presentation *"democratisation"*. The items should no longer be presented only in a single way in each case – the visitor also wants to see the *"hidden treasures in the depositories"*, to which only a museum employee and maybe a researcher usually have access.

Items as a food for thought

Museum items as a food for thought – objects exhibited in the depository can at first give a confusing impression to the visitor accustomed to the standard way of presentation, there is no storyline. When confronted with the objects presented, however, the visitor has the opportunity to independently appreciate the museum's work, the meaning of the selection of objects, their storing. If the visitor is also given a behind-the-scenes look at the work of museum conservators, this experience is further enhanced.

E-open storage

The last term I mention is linked to the idea of electronic types of *"open storage"*. Yes, we can certainly recall tours of exhibitions on the websites of many museums. Many museums have their own electronically accessible list of objects, supplemented by high-quality photographic documentation and basic data on the presented item. How widespread are the possibilities to see the exhibition or watch the work of conservators through electronic accessibility? Why not use the opportunity to watch museologists, for example, in the preparation of an exhibition?

The term *"open storage"* (*"visible storage"* or *"open study centre"*) is difficult to define, it may occur in many different contexts. I can, however, try:

Open storage – The accessible museum depository, both in the form of museum exhibitions presenting the museum's collections as much as possible, but also an insight into the work of museum employees, the workplace of conservators, restorers, etc. It enables the visitor to recognise the meaning of museum work depending on subjective feelings, he is not exposed to direct and one-sided selection of objects for exhibition by the museum. In museum terminology the term *"open storage"* stands between the terms thesauration and presentation. Working with objects is both the process of thesaurus formation, or its completion, and its presentation to museum visitors.

Musaeum Fran. Calceolari, Verona (1584)
V publikaci: **Benedetto Ceruti – Musaeum Franc. Calceolari iun. Veronesis,**
Rok vydání publikace: **1620**
Grafická technika: **rytina**
Signováno (autor): **Io. Bapt. Bertonus veron. delineavit, Hieronymus Viscardus aurifex veron. Sculp (reimagined by Gibon)**
Název: **Spectator Oculus Inserito Calceolari Musaei Admiranda Contemplator Volup Animo Tvo**
V knihovně např.: **Biblioteca Capitolare di Verone; Universiteits Bibliotheek Gent**

Museo Cospiano, Bologna (1677)
Autor: **Guiseppe Maria Mitelli**
Rok: **Před 1677**
Grafická technika: **Lept**
V *publikaci:* **Lorenzo Legati – Museo Cospiani**
Rok vydání: **1677**

Museum Wormani, Kodaň (1655)
Ve sbírce: **History of Science Museum, Oxford**
Autor: **G. Wingendorp**
Název: **A view of the museum of Doc: - Wormeus**
Rok: **1655**
Ve sbírce**: History of Science Museum, Oxford**

Museum of Anthropology, Vancouver (1976)
Webové stránky: **https://:moa.ubc.ca**
Konkrétní stránka: **https://moa.ubc.ca/homepage_feature/museum-of-anthropology/moa-final/**
Autor fotografie: **-**

„Multiversity galleries" (Museum of Anthropology, Vancouver)
Webové stránky: **https//:moa.ubc.ca**
Konkrétní stránka: **https://moa.ubc.ca/about-moa/#menu-about**
Autor fotografie: **David Campion**

Museum Boijmans van Beuningen, Rotterdam – Noah's Ark (2021)
Webové stránky: **https://www.boijimans.nl**
Konkrétní stránka: **https://www.boijmans.nl/en/depot/The Depot explained**
Název: **The Depot explained**

Museum Boijmans van Beuningen, Rotterdam – Noah's Ark
Webové stránky: **https://www.boijimans.nl**
Konkrétní stránka: **https://www.boijmans.nl/en/depot/The Depot explained**
Název: **The Depot explained**

Victoria & Albert Museum, Londýn
Webové stránky: **https://www.atlasobscura.com**
Konkrétní stránka: **https://www.atlasobscura.com/articles/turning-museums-inside-out-with-beautiful-visible-storage**
Autor fotografie: **Sarah Stierch**
Název článku: **Turning Museums Inside-Out with Beautiful Visible Storage**
Autor článku: **Cameron Maynard**

Metropolitan Museum of Modern Art, New York
Webová stránka: **https://www.mindthemuseum.com**
Konkrétní stránka: **https://www.mindthemuseum.com/post/museum-storages-the-hidden-treasures-of-the-museums**
Autor fotografie: **Maria Malichautsaki**

Název článku: **Museum storages: The hidden treasures of the museums**
Autor článku: **Maria Malichoutsaki**

L.A. County Museum of Art (LACMA), Los Angeles
Webová stránka: **https://latimes.com** --- (stránky internetových novin Los Angeles Times)
Konkrétní stránka: **https://www.latimes.com/entertainment/arts/culture/la-et-cm-lacma-broad-museum-storage-20130721-story.html**
Název článku: **LACMA, Broad, other art museums work to put storage to display**

Schaudepot Vitra Laboratory, Weil nad Rýnem
Webová stránka: **https://www.czechdesign.cz**
Konkrétní stránka: **https://www.czechdesign.cz/temata-a-rubriky/neikonicky-sklad-pro-ikonicke-zidle-vitra-schaudepot**
Název článku: **Neikonický sklad pro ikonické židle – Vitra Schaudepot**

Open Collection Storage
for the Bremen Übersee Museum

Jan Obrovský

Moravian Museum in Brno, Czech Republic

Hello, my name is Jan Obrovský and I work as an archivist at the Moravian Museum in Brno.

My paper provides a brief overview of the public collection storage at the Übersee Museum in Bremen. I visited the museum as part of an excursion organised by the Czech ICOM Committee in the autumn of 2014. It is not my aim to compare this open collection storage with similar presentation spaces of other institutions. This paper is about mediating personal impressions and captured experiences from the ethnographic part of this collection storage, supplemented by information about other parts of the Übermaxx storage. I will also introduce you to the media guide of the Übersee Museum, which visitors can use both in the main building in the exhibitions and in the open collection storage.

Briefly about the history of the museum. The Übersee Museum is located in the centre of Bremen on Bahnhofsplatz, close to the central station.

It opened to the public in 1896 as a city museum dedicated mainly to natural sciences and ethnography. From the beginning, the motto of the institution was the idea of "the whole world under one roof", which has remained with the museum to this day. Nowadays it cares for 1.2 million collection items from all over the world. After the Second World War, it reopened in 1951 and from the following year it bears its current name - Übersee Museum, i.e., the Overseas Museum.

Open Collection Storage

The publicly accessible storage building, which houses most of the museum's collection items, was built for this purpose in the vicinity of the museum's main building on Hugo-Schauinsland Platz and opened in 1999. The collection storage was named Übermaxx and is part of a multifunctional building together with the Cinemaxx cinema. The building was built between 1996-1998. The Bremen open collection storage is the second oldest in the world and the first in Europe. Previously, only the collection storage of the Anthropological Museum in Vancouver had been open to the public. Since 2008, this storage has been accessible via the covered Waldemar Koch Bridge directly from the museum's main building.

The Übermaxx storage building has five floors, part of the space is open to the public.

On three floors there are collections of natural products (3rd and 4th), ethnographic collections (3rd, 4th and 5th) and a collection of useful items related to tobacco, coffee and tea, as well as a set of ship models (3rd and 4th).

Natural science collections include sets of stuffed birds, reptiles, mammals and amphibians, as well as invertebrates and herbariums. You can see samples from these sections of the collections on the ongoing slides.

The extensive ethnographic part is divided according to continents. Europe and, of course, Antarctica are not represented. Another unit is Oceania. The exhibitions in the main building of the museum are divided similarly.

Pohled do etnografického depozitáře
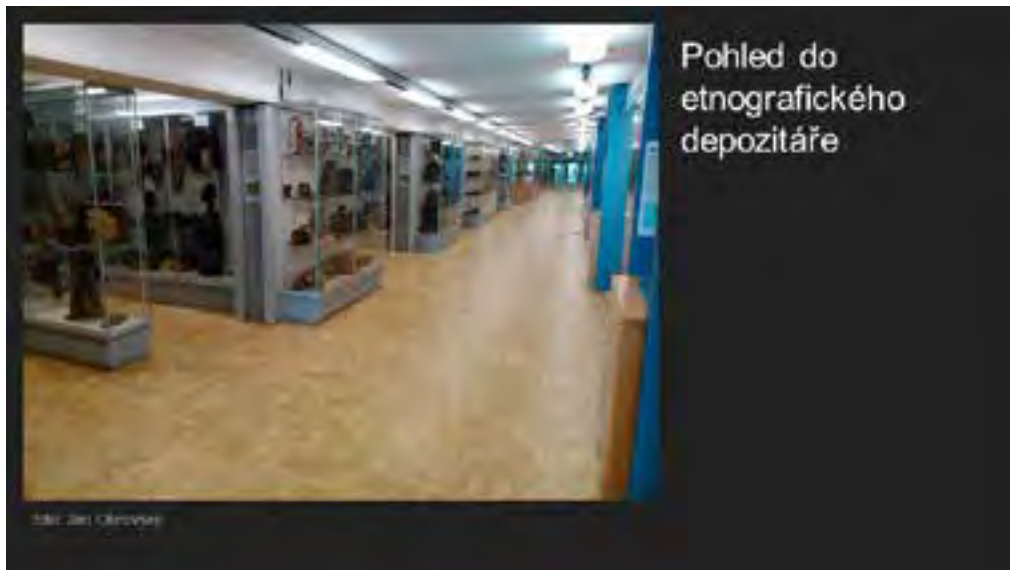
On the third floor, there are also some thematic units - musical instruments, models of boats and ships and various indigenous dwellings, huts, shacks.

Ukázka stručných informačních panelů u vitrín
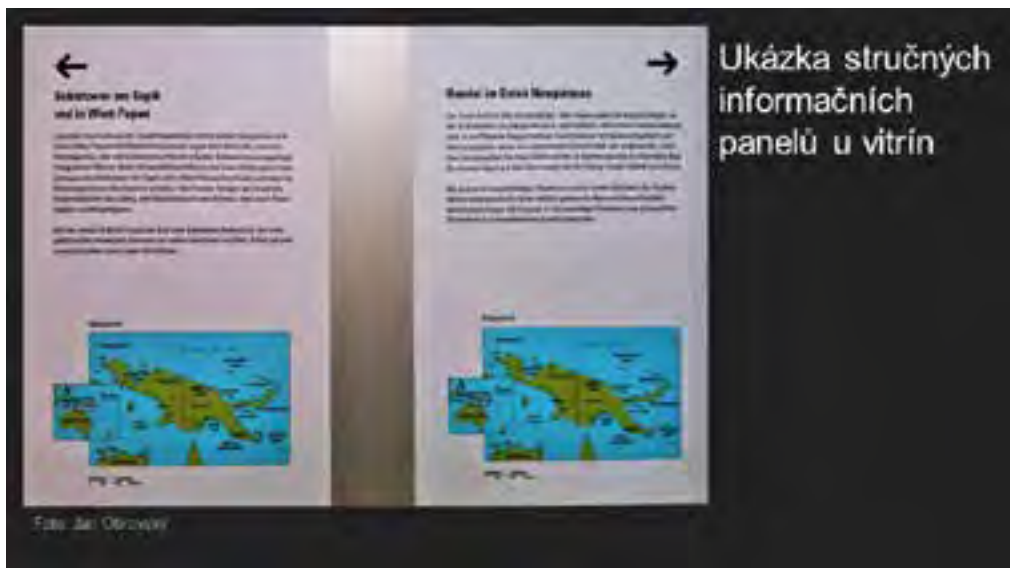
Larger sets at the continent level are then divided into smaller regions and areas and thus placed in individual showcases, where the division is mostly thematic. At the display cabinets there are information panels summarising the items and regions they come from. A large number of collection items are collected by the collecting efforts of leading German collectors, travellers, ethnographers.

We can mention the director of the museum from the time of its opening to the public - Hugo Schauinsland, whose name also bears the adjacent town

square where the Übermaxx collection storage is located. Hugo Schauinsland was behind the museum's first exhibitions and enriched the natural and ethnographic collections through several extensive expeditions between 1896 and 1926. These expeditions were in East Asia, the South Pacific and Egypt.

Another researcher whose collection can be seen in the storage is Otto Tetens. For this collection, we see the information panel in this picture. Thanks to him, the museum acquired in 1905 a collection of objects and photographs from the then German Samoa. It is thus one of the examples where the collections from colonies went to European museums, which was common in this time period in practically all countries that had some colonial states.

The museum organises various themed tours and interactive search games for children in the Übermaxx collection storage. The Übersee Museum has also prepared an online tour guide for visitors through all exhibition spaces and also through the Übermaxx collection storage. On the following slides I will briefly introduce the appearance and functions of this tour guide.

The online media tour guide in on the Xpedeo platform, which is used by a number of museum institutions in Germany. With the help of this media tour guide, the visitor can, for example, choose tours according to thematic areas

or floors of the building in their mobile phone or tablet. A tab with a picture of an object or exhibition showcases will appear on the device and the audio commentary or soundtrack associated with the item will start playing automatically. For example, the sounds of animals, the reproduction of ritual songs in voodoo showcases, or the Sun Dance of the Native Americans. The guide offers such comprehensive multimedia information for objects in the exhibitions. Just for illustration, I will present a recording dedicated to bison, in the picture we can also see the indicator of the playing soundtrack.

In the tour guide through the collection storage the information is textual, in many cases supplemented with pictures of objects. For the sake of clarity, I will now show you how the visitor will get information about a collection item in front of which they are currently standing in the storage, or which interests them. Let's look at a specific depiction of a butterfly in entomological collections.

On the museum's website, we click on the Übermaxx collection storage page, which we see on this slide. With another click we get to the guide page. Subsequently, we enter the level of division of collections in the storage. So, we can choose collections by categories, or search by inventory numbers, as we see in this picture. White numbers and letters are active, so the visitor cannot click on non-existent inventory numbers. If we go back one level and enter the science collections, we get a choice of floors and in the next step we already see invertebrates and thus we get to specific places in the storage virtually. When choosing the first showcase on the left, we see images of butterflies

and other invertebrates placed in it. By clicking on the selected specimen, the guide will show us a card with a larger image of a butterfly, in this case more images, and detailed information about this species. This way we can walk through all three accessible floors of the Übermaxx collection storage.

This media tour guide is completely available in German and English for exhibition spaces. In the Übermaxx collection storage it is only available in German, and the children version of the museum tour guide is also available only in German.

Lastly, at the last look at the ceramics and porcelain collections, I would like to convey a few impressions from this storage.

Although tour does of the collection storage does not provide a comprehensive picture as an exhibition which puts the exhibited objects in various historical, ethnographic or other contexts according to the nature of the exhibited material, the visitor can spend many hours in this storage and, so to speak, enjoy a large number of collection items, which are often in many variations and minor differences. Brief information on about showcases do not overwhelm the visitor with a load of details and thanks to the functional and intuitive media tour guide everyone can view comprehensive information only on the objects that interest them. believe that most visitors to the museum must feel good in such a well-arranged and friendly collection storage.

Open Collection Storage
– Museum's 13th Chamber is Open

Dalibor Mikulík

Museum in Stará Ľubovňa, Slovakia

Open collection storages of museums are slowly but surely beginning to gain ground in the Slovak museum world. Although the first swallows were here a few years ago, we are joining the trend, which is common in the rest of Europe, very slowly and cautiously. The Ľubovňa Museum - Castle opened its first open collection storage in 2015 during the international conference "Spoločne máme 70" ["Together we are 70"]. The aim of the conference was to commemorate the 30th anniversary of the opening of the Museum of Folk Architecture under Ľubovňa Castle and the 40th anniversary of the Sandecký Ethnographic Park in Nový Sonč. At that time, the museum made the collections of clothing, textiles, leather and fur products available to the public. The first visitors were participants in an international conference who worked in the field of ethnography and ethnology. After the tour, we only heard praise from these professionals, so we continued to make the collections available. The financing was done within our own budget and from successful projects of the Fund for the Support of the Arts.

I added a subheading to the article - the 13th room of the museum is open. Open collection storages are intended for the general lay and professional public. By the uninterested people they are often perceived as something inaccessible, mysterious, secretive and only rarely visible. The 13th room has its charm and is a great attraction, especially because it was not available before, and it was not explored by the surrounding world, until now.

The Ľubovňa Museum currently manages and operates four open collection storages out of a total of 14 collection storages: 1. collection of clothing, textiles, footwear and objects made of leather and furs, 2. collection of liturgical clothing

and liturgical objects, 3. collection of archaeology and 4. collection of art history. The incentive for making collection storages available was the participation of museum staff in the unique and exceptionally high-quality nationwide educational project M3G (third-generation museums). As part of the project, we took part in a professional excursion to Austria. Here, one of the lecturers, Dušan Buran, during a tour of the Vienna Belvedere, prepared for us a tour of an open collection storage of old fine arts. An art historian introduced us not only to the open collection storage itself, but also to its operation and mission. At the same time, the museum in Stará Ľubovňa was reconstructing the castle grounds, which include collection storages. We immediately began to think about which part of the collection we would like to make available and present in such way.

The collection of clothing, textiles, footwear and objects made of leather and furs

Types of clothing: folk, burgher, aristocratic, sacral clothing and textiles, military, police and firefighting uniforms, work clothes, women's clothing from the 2nd half of the 20th century.

Types of textiles: bed linen, bedsheets, tablecloths, polkas, corner sail, towels, grass cloths, sacks, cloths and blueprints, meterage, carpets, decorative blankets, notice boards, fans from aristocratic backgrounds.

Types of footwear: leather peasant shoes, high sara boots, boots, leather shin guards lapsáry (sara on boots), cloth shoes, prostheses and hunting shoes.

Other: leather briefcases, suitcases, handbags, wallets, belts, etc.

Year of opening: 2015

TOP collections that are installed separately: wedding dress from Torysiek, 1933 and Pluviál 1816

Operation: notice of a visit in advance, entry only with an authorised museum employee

Experience: numerous visits by ethnographers, folklorists, students, fashion designers and jewellers. The reason for visiting is knowledge, inspiration, professional practice, research and a classic tour. We evaluate positively the visits aimed at separating unsuccessful copy (especially in sewing replicas of folk clothing).

In addition to basic human needs, clothing meets several other needs. It reflects the norms of taste and creativity, it is an aesthetic manifestation and expression of social and professional status, and at the same time fully manifests itself in regionalism. The collection of clothing, textiles, footwear and objects made of leather and fur consists of more than 2,800 pieces of collection items. Andrej Čepišák, Ján Lazorík, Marcel Smetana and Monika Pavelčíková participated in acquisition activities in the past.

The items are made of a variety of materials: flax, hemp, cotton, nettle, silk, wool, leather, feathers, artificial materials on both clothing and accessories. In a small amount, we also have metals, glass, semi-precious stones, as well as plastic (beads, buttons and others) in the collections as part of clothing, textiles, accessories and jewellery. Based on the variety of materials, it is recommended, and especially, practice proves necessary, to separate wool and leather from other materials. The skin requires lower moisture (50%) compared to other materials (55%) and moulds faster in a humid environment. Wool is more prone to attack by clothing moths.

The aim is to present a comprehensive and rare collection of fur coats (today there are only two craftsmen of traditional quality fur coats in Slovakia), folk clothes of ethnic people living in the multi-ethnic territory of North Spiš (Rusins, Gorals, Jews, Roma and Carpathian Germans). Through the form of an open collection storage, we provide visitors with knowledge in the field of restoration, treatment and presentation of suitable climatic conditions. We describe the mission of collection storages, as well as their exceptional contribution to society. Entry to the storage is possible only with a curator or a museum employee authorised by the director. The maximum number of people is 15 and the length of stay is a maximum of 15 minutes. The rules set in this way have become an attraction for visitors, the more rules and protection - the greater the desire to see and experience. Our great goal is to give folklore ensembles, ethnographers, students of ethnography and ethnology the opportunity of research. We are talking about the time period (2015 - 2018) when the so-called boom of folklore started and folk costumes were sewn massively, sometimes even without the necessary research. Therefore, we were very pleased that in addition to experts in ethnography and art history, many folk ensembles would come over and study the clothing of our ancestors. We were glad that they would not be wasting considerable funds for sewing low-quality (material, pattern, etc.) folk costumes. Many of them, both lay and professional public, perceived this „novelty" in Slo-

vakia extremely positively. In the case of the first open collection storage, we noticed an unusually high level of media interest, which presented reports from the open collection storage in their prime time.

Collection Space and Equipment

Light is said to be one of the biggest pests of textiles because it accelerates the decomposition of fibres, it causes the loss of elasticity and changes the colour of the textile until it ultimately fades. Therefore, glass window panes are treated with a foil that retains UV radiation.

Cabinets offer two options for textile storing: horizontal and vertical. From the ground to the level of a human, there are usually drawers and higher there are bars for hanging objects. Ideally, all objects should lie down. The method of laying textiles and clothing horizontally or by winding is recommended due to the fact that the load is distributed over the entire area, not over one or two points. We have several types of drawers for storage: drawers (118 cm long, 90 cm wide, 7 cm deep) with a front that protects the interior from dust; deep drawers with lower front (two types 117 cm long, 56 cm wide, 15 cm deep). Choosing a drawer with the front that reaches high up to the next drawer is the best solution to prevent dust and other kinds of filth from penetrating the fabric. This problem can also be solved by well-fitting external cabinet doors, which protect the interior from dust.

Carpets and large fabrics are wound on a rod. In this way are wrapped in cloth and in stored in a closet. There is a large work surface in the collection storage for handling objects, which allows comfortable working with the majority of objects. A significant element in the storage facility are metal cabinets with documentation cards for textile items.

According to professional guidelines, textiles should under no circumstances be folded. If it cannot be avoided, mainly for spatial reasons, the folded areas are to be lined with silk paper or cotton rolls. The exception are "folded skirts", which are folded and stored in the traditional way (pleating), which has guaranteed the stability of the material for centuries. Such folding guaranteed colour permanence and protection against dust and dirt. Despite modern technologies and approaches to the protection of collection items, this method has proven to be the most effective and durable. It also serves to educate museum staff and the general public. At one point the museum was also organising courses about storing objects in such way for young ethnographers and folk-

lorists. The textiles are folded with the help of silk paper, which prevents the formation of imprints from one part of the fabric to another, often of a different colour or decoration.

If the size of the fabric allows it to be stored without folding, we always opt for this method. However, the size of the drawers, especially the length and width, do not allow us to store many items in this way. It is advisable to store two-dimensional objects rolled up on a non-acidic cardboard over cotton cloth and thus put them in drawers. We use hangers of one type for hanging. We fold skirts "the grandmothers' way".

We place shirt and coat items on hangers with extended shoulders. Similar to object covers. We started wrapping caps, hats, shoes, handbags individually in silk paper and we store them in deep drawers. The most important principle is not to mix coloured things with white pieces, heavy objects with delicate and we do not burden formed objects.

The collections are stored in custom-made furniture with safety glass and museum lighting. The aim was to show visitors the richness of the collection and to present it in the form of suitable storage, lighting and atmosphere.

The Collection Mode

In the collection storage we try to maintain a relatively suitable temperature. We use specialised devices for regulation. We check the temperature and humidity of the environment at least three times a week. Cleaning is done by a janitor, with equipment designed only for this storage.

We are most afraid of moths. At the moment, all incoming items are cleaned, but we still use lavender and cloves as a precaution, except for drawers. We do not yet know the preventive measures against mould. During frosty days in winter, we ventilate fur coats outside, which has proven to be the best form of pest extermination for centuries.

Marking of Objects

So far, we have not focused on marking the drawers and objects in them. Our main task was to clean the objects and move them quickly to the new collection storage. On every collection item we sew separate label with incremental and registration number.

The Collection of Archaeology and the Collection of Art History

This collection space is directly connected with the already renewed collection storage of art history. After the reconstruction, a unique space was created, which connects archaeological and artistic objects into a joint open collection storage. The implementation of the project fulfilled three basic activities of a museum - protection, storage and professional access. The collection of archaeology stores 4,558 pieces of collection items and about 40,000 pieces of archaeological findings made of clay, metal, glass, wood and other materials. The most numerous findings include shards of ceramic vessels, tiles from heaters with various patterns, glass and metal fragments, coins and small objects. Visitors can see part of this material heritage directly with their own eyes. The exhibited findings come from archaeological excavations carried out at Ľubovňa Castle (Baroque palace, military barracks, 4th courtyard behind the chapel, Renaissance palace), the town of Stará Ľubovňa and its surroundings (Podolínec, Hniezdne and Plaveč Castle).

Information panel on the acquisition of a collection fund in the collection of clothing

Archaeological excavations at Ľubovňa Castle. Information panel in the collection of archaeology

Archaeological research of military barracks from the 17th century. Information panel

Open Study Room of the Ceramics and Glass Collection of the Bratislava City Museum

Zuzana Francová

Bratislava City Museum

Since its establishment in 1868, the complex of buildings of the Old Town Hall has become the seat of the Bratislava City Museum. One year later, the first exhibition was opened in the three most beautiful historical rooms of the town hall. Initially, all collections were exhibited. However, as the number of items kept growing additional rooms were needed to store them. Since 1926, the museum's exhibition space has expanded rapidly. Gradually, the rooms on the 1st and later the 2nd floor of the neighbouring Apponyi Palace were made available, as well as other premises in the Old Town Hall. The question of how to store the collection properly remained a persisting problem occurring during the whole interwar period and beyond. Due to the lack of storage space, the museum was often forced to lend its collection items to various city offices.

Since the 1960s, the museum has gradually acquired additional rooms in the complex of buildings of the Old Town Hall and in the Primate's Palace, which were vacated after the eviction of various city offices. Collection storages began to be built based on the type of material or type of objects. A great boom occurred after PhDr. Simon Janč took up the position of the museum director (from 1963). It is remarkable that already in 1964 it was possible to prepare a project documentation for the study rooms of ceramics and glass on the ground floor of the north wing in the Old Town Hall's courtyard. Its implementation did not begin until 1966 because of the lack of production capacity, and so the storage equipment suppliers could not be secured sooner.[1] A storage with

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[1]   JANOVÍČKOVÁ, Marta. Snaha o vyriešenie dlhodobých problémov s uložením a ošetrovaním zbierok *[Efforts to Solve Long-Term Problems with the Storage and Treatment of Collections]*. In: HUPKO, Daniel (ed.) *Vo víre dejín. 150 rokov Múzea mesta Bratislavy [In the Vortex of History. 150 Years of the Bratislava City Museum]*. Bratislava: Bratislava City Museum, 2018, p. 162.

a standardised cabinet system (a combination of full and glazed wooden cabinets, mostly placed on top of each other on three floors) was actually created in this place and the collections in it were stored quite neatly for some time. But we have no information as to whether this collection storage would actually serve as a study room. From the beginning, it was managed by Lujza Kresánková (1923 - 2009) for many years, a specialist in arts and crafts. Only the items belonging to the collection of arts and crafts were stored in it. Sometime later, after an agreement with the colleagues, some selected ceramic artifacts from the ethnography collection were transferred here. The space continued do fill up and several large objects were stored freely, like on top of cabinets. In addition to ceramics and glass, objects made of other materials were placed here in an emergency as well: smaller profane textiles and carpets, small (and over time also large) framed paintings, drawings and graphics, as well as several pieces of historical furniture. Due to the convenient and easily accessible location, exhibits for domestic and foreign exhibitions were regularly packed in this area and a temporary area was also set up here to photograph them. At least in the mid-1980s, this collection storage - long regarded as one of the best in the museum - was already so cluttered that making it accessible for study purposes was out of the question.

In the early 1970s, the museum planned to establish a study room of guilds on the 1st floor of the former Chapel of the Corpus Christi (*Corporis Christi*) on today's Panská Street (then Nálepkova Street)[2]. In this building there were wooden guild chests as well as flags belonging to the collection of older history. Additionally, a rare collection of wood-painted shooting targets was concentrated there for some time. Even in this case, it was a "classic" collection storage space. We can therefore state that despite the repeatedly declared efforts to create and operate study rooms in the collection storage on the museum ground, it did not happen in the 20th century.

Study Room of a Collection Storage
First Phase, the Creation of Analytical Data

The idea of creating a study room in the collection storage in the Bratislava City Museum appeared again in the first decade of the new century in connection with the planned reconstruction of the Rococo Apponyi Palace from 1761 - 1762, which was the first stage of the general reconstruction of the Old Town Hall.[3] The

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2   Ibid, p. 162.

3   Ibid, p. 233, photo on p. 235.

attic of this palace, with a total area of almost 243 m^2, with premises which previously had various uses (maintenance workshop, storage for collections with unsuitable conditions), was to be converted into one large collection storage, accessible both by stairs from the second floor of the Museum of Historical Interiors, as well as from the neo-Gothic extension of the Old Town Hall (stairs between the third and fourth floors). In search of a suitable content for the storage, two material groups were selected as the most suitable alternative: ceramics and glass. Due to their specificity, the museum's archaeological collections were excluded from this selection.

From the beginning, we primarily understood the new collection storage as a specific type of workplace with occasional and regulated public access, possible only if certain conditions are met.

It was therefore not a matter of creating an "open", or "presentation museum collection storage", creating a standard part of museum tour - as we know it from some museums in Slovakia or abroad (for example, the historical exhibition of the Mining Museum in Rožňava, located in the building of the former Markov leather manufactory, open for public in 1999, or the Museum of Applied Arts (MAK) in Vienna, or the Museum of Applied Arts (Kunstgewerbemuseum) in Köpenick Castle near Berlin).

The construction of the study room in the collection storage was preceded by an extensive and demanding preparatory phase. Its aim was to formulate requirements for the manufacturer for new suitable storage furniture. Since the intention was to concentrate ceramic and glass collection items from various sub-collections of the museum in one place as much as possible, first, it was necessary to quantify the volume of eligible objects and at the same time their closer typological specification. From the beginning, it was clear that the selection of objects will be influenced not only by technical factors - the given space, such as small wall space, the use of plasterboard, but also the planned opening of the collection storage. Therefore, excessively large and heavy ceramic objects (large sculptures, reliefs) were excluded from the selection. These objects would have to be hung or placed freely in the space, which would bring the risk of damage during the planned movement of people. The curator of the collection of arts and crafts and older history was given the task of preparing the necessary materials for the designer. She collaborated with colleagues - curators of other collections possibly coming into play (ethnography, recent history). By analysing selected groups of objects, we came to the conclusion

that it is necessary to make cabinets of three types: standardised multi-storey cabinets with shelves of double depth and also atypical dimensional cabinets for large specimens. After handing over the documents to the designer, we no longer had the opportunity to influence the production process and no consultations with the supplier took place. The production documentation of the cabinet furniture was prepared by the company IDONA in Bánovce nad Bebravou. We took over the finished collection storage and the equipment in 2008. New exhibitions in the Apponyi Palace building were made available at the same time.

Storage System and Technical Equipment of the Collections Storage

There are custom-made lockable wooden cabinets of various types forming a unified modular system in the collection storage. Most of them fill up the central space, whereas the sets are facing their backs and aisles are formed between them. The most numerous are three-storey cabinet sets consisting of a full lower part with two levels (dividing wooden shelf), glazed middle parts with three levels (two glass shelves) and full extensions without shelves. The total height a set is 224.5 cm (70 + 110 + 44.5 cm), the cabinets have a uniform width of 79.5 cm. They differ in two depths: the smaller is 35 cm (65 pieces) and the larger 56 cm (54 pieces). Cabinets with greater depth are designed especially for multiple lunch and wash sets. All cabinets have mirrors inside in the back. Moreover, the collection storage contains another 15 large cabinets with massive central shelf and glass double wing doors. They are 180 cm high, 79.5 cm wide and 60 cm deep.

The lockable work area is separated by a high glass wall. In it is a large work desk where one can work behind a computer (internet connection) as well as other sets of cabinets, including large atypical ones.

The collections storage space is protected by camera system with permanent recording control, recording the space and administering visual inspection of the informant - porter. It is also provided with an electronic fire alarm (EPS) with an output to the control device in the informant's room.

The room temperature is regulated for the winter time by heating system with forced hot water circulation. Water temperature regulation is possible in accordance with the requirements of the room's operation, or in accordance with the outdoor temperature. The units of hot air heating are FAN-COILs. The cooling system has a separate distribution with a combination of connections to FAN-COILs. Measurements and regulations are solved by a combination of automatic mode and manual control.

Arranging and Dividing Collections

The relocation of the collections to the new collection storage began in the spring of 2008. This was done under considerable time pressure, as it was necessary to free up the space of the original storage of ceramics and glass collections in the courtyard of the Old Town Hall, which had to be handed over for reconstruction, as soon as possible. Ceramics and glass were continuously photographically documented, then packed in transport baskets and special so-called plastic crates with a load capacity of 30 kg (the museum bought 50 pieces for this purpose). Maintenance workers as well as part-time workers (at the time those were soldiers on civilian service) took the crates without a lift (which had not yet been in the building at that time) to the museum's restoration workplace on the 4th floor of the building. There the restorer Bc. Miriam Kocúrová and her assistant washed them. Clean objects were repacked and gradually transferred to a new storage area, fortunately only a few meters away, and accessible only after overcoming a small number of stairs. In addition to the classic popping foil, the museum also purchased special textiles for the packaging of pure ceramics and glass, which proved to be particularly effective for numerous lunch, beverage and washing sets, especially plates and bowls stacked in plastic crates.

The furnishing of the collections storage itself was the most pleasant part of the whole process, but it took time. First, it was necessary to carefully consider the overall philosophy of the layout of items. The items came to the collection storage in a different type composition, sometimes it was necessary to quickly store them provisionally and later, when completing individual files, relocate and move them. When storing the items, we chose a combination of different aspects: we took into account the material, typology of objects and their dimensions, but also the question of chronology, or provenance.

Regarding the ceramics and the composition of the collection, we have created the following material-typological group:

- faience - Haban, post-Haban (Haban-Slovak), West Slovak jug making; larger collections: Stupava (old, specifically the work of F. Kostka), Modra (old, new), SUP products (*Spoločnosť umeleckého priemyslu [Society of Art Industry]*), the work of figuralists and specifically the work of I. Bizmayer; Italian, German and French faience

- pottery - pots, containers, jugs, baking pans and various forms

- earthenware (hard and soft)

- tiles and their fragments (historicism, secession)

- porcelain - beverage, lunch and washing sets and individual items,

- utility-decorative solitaires (vases, calamari, cans, souvenirs, figural sculptures and others); localities: Vienna, Bohemia, Germany, Hungary (Herend) and others; specifically the work of Bratislava painters on porcelain

With glass we proceeded chronologically from the 18th to the 20th century (Baroque, Classicism, Empire, Biedermeier, Neo styles, Art Nouveau, Art Deco, the interwar period, the period after 1945); also typologically: colourless glass decorated with glyptic techniques (grinding, cutting, engraving) and painting, coloured glazed glass (various shades), glass in combination with metals (assembly), multiple beverage sets; glass objects of 20th century artists.

The construction of the study room in the collection of ceramics and glass was one of the activities for which the Bratislava City Museum won an award in the 6th year of the national competition *Múzeum roka 2008* [*Museum of the Year 2008]* (category B: regional, local and city museums and galleries).

Making the Collection Storage Available to the Public and the Experience with its Operation

The study room of the ceramics and glass collection of the Bratislava City Museum was opened to the public for the first time in 2010. We symbolically welcomed the first group of visitors to the guided tour at the time of the popular regular event of the city council *Bratislava pre všetkých [Bratislava for All]* on 24 and 25 April 2010 (a total of ten entries took place). Another five tours took place as part of the event *Noc Múzeí [Night of Museums]* on 15 May 2010. Let us remember that the Bratislava City Museum at that time, due to the reconstruction of the Old Town Hall, still had its central exhibition closed – City History Museum. At that time, the public's attention was focused on the relatively new exhibits in the neighbouring Apponyi Palace (Museum of Viticulture and Museum of Historical Interiors). Furthermore, from the beginning we paid attention to the promotion of the study room in the ceramics and glass collection, which was a unique phenomenon in the Slovak museology at that time. We informed about it both on the website of the professional periodical *Múzeum*

[Museum][4], and also in the media: Slovak Radio - Rádio Regina and TA3.[5]

From the middle of the year onwards, we introduced a system of regular inspections once a month, always on Thursdays at 10.00 and 16. 00. They took place on 10 June 10; 08/07, 12/08, 16/09, 14/10, 11/11 and 09/12 2010. The chosen periodicity of the commented tour guides has proved itself to us. The interest in visiting the collection storage was great at the beginning, people were buying tickets, or they booked in advance to make sure they get to the show. The maximum number of participants in one entry was limited to 30. The tours would usually last at least one hour, but for the people with greater interest they could sometimes last almost twice as much. They were attended mainly by people of older age groups, mostly women, but also married couples, for instance. The response was considerable, people would ask about various things, often of an elementary nature (the definition of individual types of ceramics and glass, technical differences between them, etc.), but there were also more fundamental questions and comments regarding some of the groups or individual subjects presented. People appreciated the opportunity to see otherwise little-presented collections, often nostalgically mentioning similar objects that were found in their families in the past. Some offered to bring and donate to the museum objects similar to those they saw in the collection. However, this did not bring actual acquisitions for the museum.

During the year 2011, we also saw the public's interest in touring the collection. Guided tours took place again at the *Bratislava pre všetkých* event: 16 and 17 April 2011; and subsequently at the *Noc Múzeí* on 14 May 2011. Moreover, the general public had the opportunity to visit the collection storage eight more times in that year: 13/01, 10/02, 10/03, 07/04, 05/05, 13/10; 10/11 and 08/12 2011.

At the beginning, we also noticed interest from colleagues - especially museologists, but also conservationists. We prepared, for example, tours for employees from the Museum of Education and Pedagogy in Bratislava, or from the Forestry and Woodworking Museum in Zvolen. For students of relevant disciplines, we adapted ("tailor-made") the tour as needed at the time. In 2011, students of the Department of Scenography at the Academy of Performing Arts, led by art theorist Eugénia Sikorová († 2019), visited the collection.

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4   FRANCOVÁ, Zuzana. Štúdijný depozitár keramiky a skla Múzea mesta Bratislavy *[Study Collection Storage of Ceramics and Glass of the Museum of the City of Bratislava]*. In: Múzeum 2010, no. 4, p. 38-39, 1 black and white photography.

5   Slovak radio: Rádio Regína - the interview was broadcasted on 12 June 2010 as part of the show *Bratislavská Panoráma [The Bratislava Panorama]*; TA 3 – the interview was broadcasted on 3 June, 2010.

Furthermore, we would also carry out guided tours for students of museology from the Department of Ethnology FFUK on internships at the Bratislava City Museum, for students of art history at the University of Trnava, accompanied by Mgr. I. Štibraná, PhD, or for students of the Department of Ceramics at the Jozef Vydra School of Painting in Bratislava. These were small groups, mostly 7-10 people. Paľo Macho, a leading Slovak glass artist and teacher at the Academy of Fine Arts, expressed repeatedly interest in visiting the collection storage with students.

We also promoted the collection storage outside Bratislava in the form of a PowerPoint presentation, as part of the educational programme Curatorial Studies in Zvolen on 15 February 2011.

In 2012, we prepared three guided tours for the public in: 12 January, 8 and 12 March and 2012.

A year later, we presented the collection to students of the Department of Ethnology and Museology FFUK in Bratislava during museum practice (March 25, 2013), and also to participants in a scientific conference with international participation Muž a žena [*Man and Woman]. Vzťahové súvislosti v kontexte múzejných zbierok [Relationship Connections in the Context of Museum Collections]*, which took place in the premises of the Bratislava City Museum (03/10/2013), we organised in cooperation with the Association of Museums in Slovakia.

After the initial "boom", we started to notice a significant decrease, even a loss of interest of the general public in guided tours in the collection storage. In 2013, three guided tours took place with only a small number of participants: 14 March (7 persons), 20 June (1 person) and 12 December (members of the Czechoslovak civic association Mosty (8 persons)). In February 2014, we carried out another guided tour. In that year, the museum started a demanding project of digitising the collections as part of Operational Programme of Society Informatisation (OPIS). A large part of the collection items from the collection storage of ceramics and glass was included in the so-called digitisation campaign. After the establishment of one of the two digitisation workplaces in the Old Town Hall building, there was a large movement of objects. They were packed up and transferred within the building. In this situation, the entry of strangers into the storage was undesirable, so we stopped organising the tours. After the end of the digitisation process, in the recent years, the commented tours of the collection storage were carried out only sporadically. In March and April 2018, we organised two shows for a group of seniors - regular visitors to museum events. Other than that, we made the collection storage available to interested experts

on more special occasions. One of the occasions was the Festival of Museums, which was hosted in 2018 by the then jubilee Bratislava City Museum, celebrating the 150th anniversary of its founding. For its participant we had prepared two guided tours on 18 June 2018.

We planned to include occasional tours of the collection storage in the museum's offer at the end of the year 2020. However, the restrictions associated with the second wave of the coronavirus pandemic thwarted our plans. We hope that when the restrictions ease, we will be able to welcome in this space again those people who are interested in historical artefacts from ceramics and glass, which form a very diverse and qualitatively remarkable part of the collection of the oldest museum in Slovakia with a continuous 153-year-old tradition.

Insights into the study room of the collection storage of ceramics and glass, photo of the Bratislava City Museum, author: Sylvia Sternmüllerová

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