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Digitising at the Archives of the Republic of Slovenia

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The Archives of the Republic of Slovenia faced the problem of digitising archive material already several years ago. As any archive institution, we store archive materials on various carriers: paper, parchment, and in recent times, also digital media. At what point certain archive materials are digitised depends on several factors, for example on the importance, frequency of use, etc. Archive material that is not frequently used may wait for digitising in a later period.

But an important factor that needs to be taken into consideration already in the phase of planning the digitising of archive material is financial means. Nowadays, money for digitising projects is practically not available, and formerly it was even more difficult to ensure it.

With the rapid development of technology, it is important that archives also follow the new technologies and new trends. The archives must get rid of the opinion that they are useless, that everything coming from an archive means backwards, unnecessary. We need to be in step with the times. A motto that the Archives of the Republic of Slovenia used on a poster some time ago – *"At our place time has not stopped, we only archived it!"* – needs to be taken very seriously. This is true especially after the implementation of the new Protection of Documents and Archives and Archival Institutions Act from 2006[1] which among other things also regulates the storage of documents in electronic form. Otherwise it could happen that the archive material which is now archived only electronically would get lost.

On this occasion I would like to present the projects of digitising archive materials that the Archives of the Republic of Slovenia has completed up till now.

A sort of a precursor to digitising was the project of transferring the card records of the material on victims of war violence to a computer database. Namely, in 1995 the National Assembly of the Republic of Slovenia passed the Victims of War Violence Act,[2] which enabled certain persons to acquire indemnification for the time of war. Every day a great number of applications arrived at the Archives of the Republic of Slovenia: for example, in 1996 we had 25,000 applications from this sphere only. The material relating to that period is written on index cards, and the paper is of very bad quality. The colleagues were aware that it would not be possible to clear such a large quantity of applications in a reasonable time, and that at the end the archive material would be completely destroyed and useless. A decision was passed that the existing data would be processed on computer. The work was done in 50 days. The created computer database contains data about 205,000 persons. Computerised issuing of certificates therefore enabled a several hundred times higher efficiency of work. On the basis of this register, around 70,000 certificates have been issued to individual applicants to date.

The **first real project** of digitising archive material in the Archives of the Republic of

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[1] Official Gazette of the Republic of Slovenia, No. 30/06.
[2] Official Gazette of the Republic of Slovenia, No. 63/95 with amendments No. 8/96, 44/96, 70/97, 43/99, 28/00, 1/01, 64/01, 110/02 and 3/03.

Slovenia was the project of digitising the Franziscean Land Cadastre from 1826. The beginnings of the project go back to the year 2000. As you know, a cadastre is an inventory of plots performed by the state in order to obtain criteria to define a uniform tax base for land. With it, the state records information about land in terms of ownership and legal rights, with regard to the size and area of land, its position and shape.[3]

With regard to formation, we distinguish three types of cadastres which were formed from the middle of the 18th century until the first half of the 19th century. They are named after the Austrian emperors that induced their creation. The oldest is the so-called Theresian Cadastre, named after the empress Maria Theresa, which was created in 1748–1756. After approximately 30 years it was followed by the so-called Josephian Cadastre, named after the emperor Joseph II; it was created in 1785–1789. Both cadastres contain only the written part, while the graphic part, i.e. the cadastral maps, is missing. After the wars with Napoleon, the time came for implementation of a more stable cadastre, which was introduced by the Austrian Emperor Franz I by a patent in 1817. It involved placing a cadastre in a geographical coordinate system. A precise measuring was performed, and cadastral maps were made on a scale of 1:2880.

The Franziscean cadastre is composed of a written and a graphic part (cadastral maps). The written part is composed of a protocol of land parcels, protocol of building parcels, an alphabetical index of landowners, area by cadastre cultures, an inventory of borders of cadastral municipalities, etc. We need to stress that the cadastre protocol in Carniola does not contain three integral parts of the Franziscean Cadastre protocol, i.e. a list of unknown land owners, a calculation of surface areas and written proofs of nomination. The graphic part is composed of an original map, an indication sketch, a copy of the map and a rectification map that was made in 1840s. Also enclosed was the so-called "reambulated" cadastre from the 1860s. Cadastral maps were made from very high quality hand-made paper in the size 71,5 x 58 cm on the basis of previously made indication sketches. The sheets with maps were then coloured by hand with regard to a certain cadastre culture or to an area, and inserted into a special wrapping.

The Archives of the Republic of Slovenia stores most of the original maps of the Franziscean Cadastre for the territory of the Republic of Slovenia. The conservation status varies greatly for the former historical provinces. Most material is preserved for the former Carniola, while for other provinces much less is preserved, and it is also kept in archives outside the Republic of Slovenia.

In the 1990s the interest of clients for the Theresian Cadastre increased considerably. Namely, cadastre protocols are a very rich source for studying the economic situation and life of our towns, boroughs and villages, and for the development of craft, manufactures and other production; in them we find information about land owners, the manner of land cultivation and use – in short, an insight into agrarian economy, formation of measures, value of money, etc. Also of immense value are the original cadastral maps with a visual image of the landscape with regard to land and building parcels, etc.

The interest of clients in viewing and ordering reproductions of cadastral maps of the Franziscean Cadastre increased mainly in order to obtain various certificates in the denationalisation procedures. Daily mass use of original cadastral maps meant a huge threat to the good condition of this specific archive material. The Archives of the Republic of Slovenia also did not have an appropriate reproduction machine to reproduce the desired maps itself, so an external provider performed this work for the Archives. There was a high probability of additional damage occurring during transport. All this led the colleagues since 1994 to start thinking about digitising the cadastral maps of the Franziscean Cadastre.

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[3] Peter RIBNIKAR, Zemljiški kataster kot vir za zgodovino (Land cadastre as a source for history). (In: *Historical Newspaper*, 36 (1982), No. , p. 321–337.)

At that time, three possibilities existed: photocopying, microfilming or scanning. First the idea about photocopying the sheets with maps was dropped. These were too big, and another problem was the ground colour. The colours on the sheets with maps are in different shades, and tests showed that photocopying did not provide the desired quality. The idea of microfilming was also dropped. The best option would have been scanning, but the hardware was at that time too expensive. The digitising project was therefore dormant for a few years. But at the end of the last millennium, the decision was finally made to perform the scanning of the cadastral maps. Pursuant to a public tender, an outsourcer was selected in 2000 and the project of digitising began. Due to limited financial means, the scanning took four years.
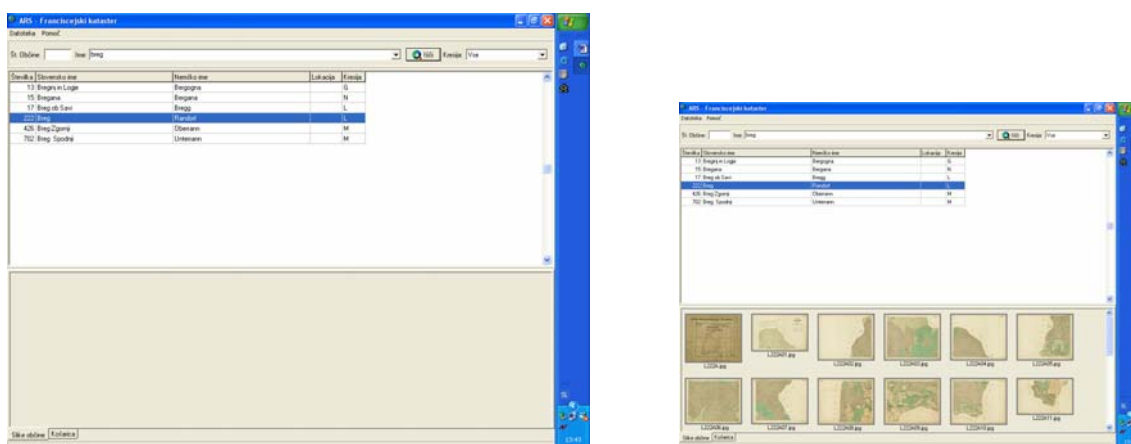
The work was performed outside the archives' premises at the premises of the digitisation provider. The archive material therefore had to be transported there and back. To prevent damage in transport, the archive material was protected by archival boxes made especially for this project.

The scanning of sheets with maps was done on a flow scanner. It was necessary to solve several problems, of which I would like to mention the colouring, as the colour shades were exactly specified and at the same time they represented certain land cultures; the main problem was the quartz sand with which they dried the names and marks written on the maps in black ink.[4] This sand damaged the glass of the scanner several times, but nobody found the reason for these damages. Namely, it was impossible to see the quartz sand on the paper with the naked eye. The cause of the damage to the scanner glass was soon found – in the archival boxes in which the cadastral maps were transported, where a lot of fine sand was discovered.

The scanned cadastral maps were saved on magneto-optical discs, and today a back-up copy is saved on DVDs.

The total scanned Franziscean Cadastre amounts to around 83,000 data files, and the original maps only to around 28,000 data files.

The images were saved in JPEG format and not in TIFF format (deposit problems). An individual cadastre sheet therefore amounted to around 80 Mb. That is too much for storing and quick viewing, especially when clients have several images of cadastral maps open at the same time. We decided to convert all images to JPEG format and compress them to 3 Mb size. That is the minimum size whereby the size on the screen and transmission of separate parts is still of adequate quality. By this, we also got a workable database of around 70 GB.
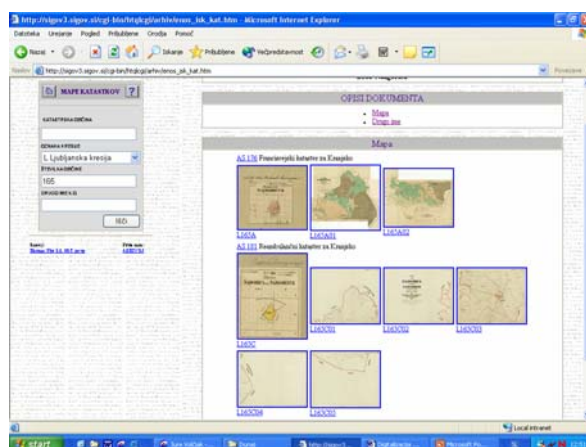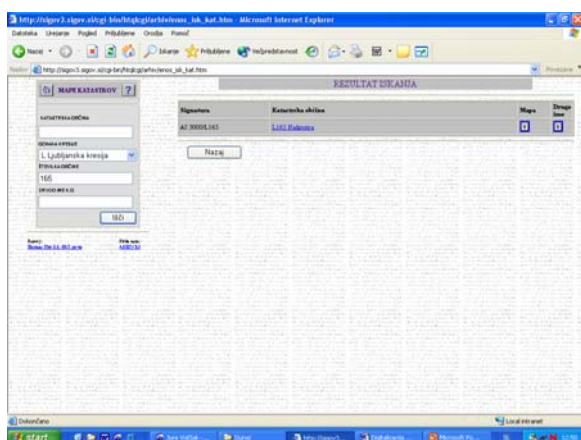

An example of viewing the Franziscean Cadastre over the Internet

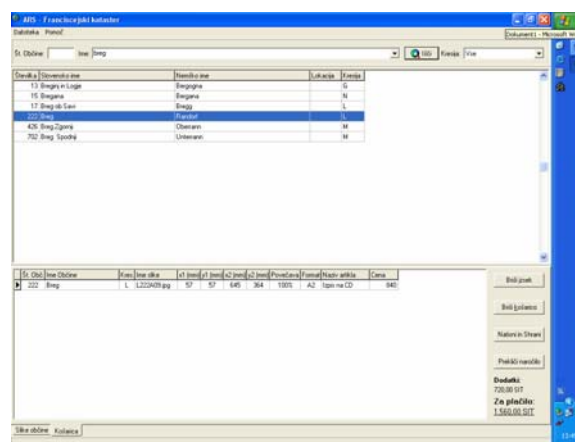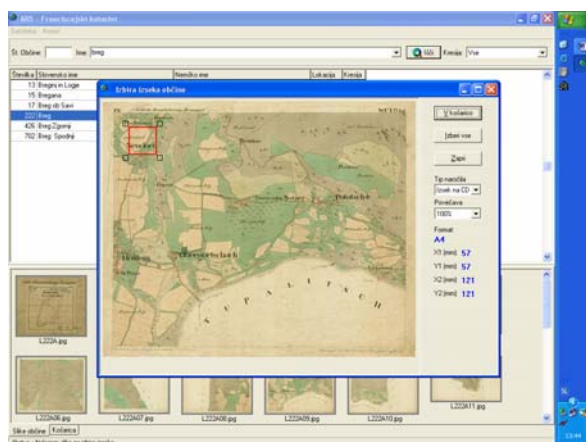One of the requirements of the public tender in selecting the provider of scanning was

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[4] Alenka KAČIČNIK GABRIČ, Dragoceni original ni več izpostavljen obrabi (Precious original is no longer exposed to wear and tear). In: *Delo*, 10 January 2008.

also designing a suitable programme for data search. The designed programme enables search per the Slovene and German names of the cadastre municipality, per district and per cadastre municipality number. When we specify the requested cadastre municipality, we are shown on the screen the thumbnails of the sheets of a given cadastre municipality at a size of 3 x 3 cm.

Ordering the Franziscean Cadastre via a special programme

These thumbnails help us navigate around a particular cadastre municipality. Upon clicking the appropriate image, the original size of the chosen cadastral map opens. We can increase or reduce the size of the map. The programme also enables ordering parts or extracts of the chosen cadastral map. This is performed with the help of a reduced image in the size of the screen (i.e. a middle size), where we mark the desired part with a special square. At the same time the programme writes the size of the chosen section (A4, A3, A2) and the price of a printout or recording on a CD or USB stick. For printouts of sizes larger than A3 we use printing on a plotter, which is performed upon request of the client by an external provider.
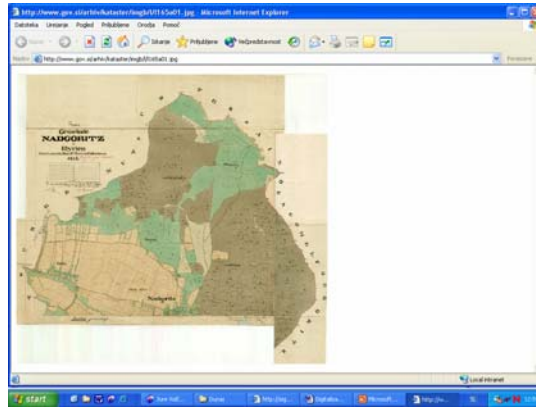

Ordering Franziscean Cadastre via a special programme

As already mentioned, the project was completed in four years, i.e. in 2004, when editing of all records was performed.

The demand of clients for digital recording is still very high, so that the decision for digitising was completely legitimate. The clients in the reading room can daily view the digital records of cadastral maps on the computer; otherwise they would have to view them in the original. The sheets with maps would today be so damaged that we can question if their

use would still be allowed at all. There is practically no borrowing of cadastral maps now.[5]

In 2004, access to viewing the digital archive of cadastral maps of the Franziscean Cadastre was provided also via the Internet, which can be checked on the Internet website of the Archives of the Republic of Slovenia, http://www.arhiv.gov.si/. We were forced to reduce the size of the database of records by 15 times. By this, we have increased the speed of use, but lost something on the quality of the record (for example, numbers of individual plots are not readable).

An example of viewing the Franziscean Cadastre over the Internet

In 2006, the Archives of the Republic of Slovenia, after completed digitising of the maps, started digitising the written materials of the Franziscean Cadastre as well. The work was again performed by an outsourcer (Mikrografija from Novo Mesto). The main requirement set by the Archives was legibility and colour adequacy of the records, with the lowest financial outlay. It was decided that the most used basic parts of the Franziscean Cadastre protocol would be digitised, i.e. the sketch of the cadastre municipality, the description of the border of each cadastre municipality, the list of land parcels, the list of building parcels and the alphabetised list of land parcel owners in each cadastre municipality, the collection of the use of plots in each cadastre municipality, and the assessment protocol. All material could not be digitised, as the material is not completely preserved, and the condition varies considerably among provinces; a substantial part was nevertheless included The project was completed last year, and the digital records of the written material in PDF form[6] are available to clients in the reading room of the Archives of the Republic of Slovenia.

With the conclusion of the project, we have provided easier accessibility, and by this directly contributed to preserving our cultural heritage.

The patent of the Emperor Franz I on preparation of the Franziscean Cadastre dating from 1817 was valid for the whole Austrian part of the empire. We find it in Croatia, Italy, Romania, Poland, Slovakia, the Czech Republic and Austria. But the project has so far been successfully completed only by Slovenia, and we received recognition from the international expert public for it.[7]

The second project of digitising archive material in the Archives of the Republic of Slovenia was the project of digitising the Deeds Collection. This includes around 6,000 pieces, mainly parchment documents of various dimensions. Approximately half of the deeds

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[5] For the specification I thank to Mr. Milan Bizjak from the Archives of the Republic of Slovenia.
[6] 320,000 JPEG files joint in 13,811 PDF files (450 GB). For the specification I thank to Mr. Milan Bizjak from the Archives of the Republic of Slovenia.
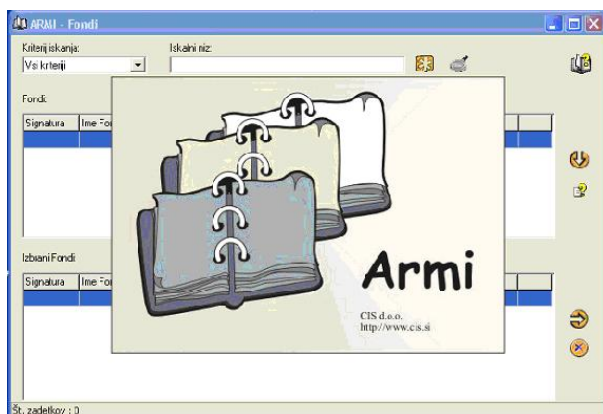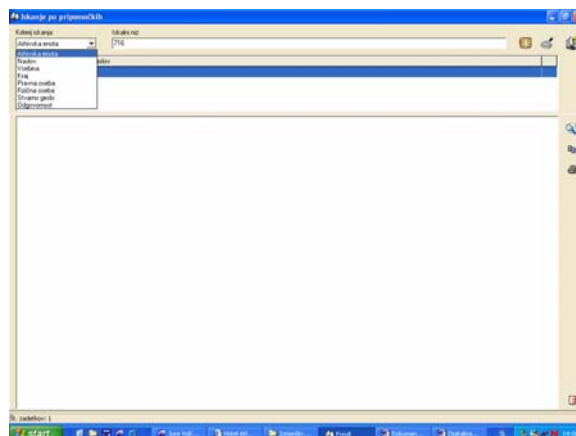[7] Id.

the Archive inherited from its predecessors, and today they comprise a chronological series. The other half are deeds which were, on the basis of an archival agreement between the Republic of Austria and the Kingdom of Serbs, Croats and Slovenes from 1923 and a Protocol between the Federal People's Republic of Yugoslavia and the Republic of Austria in 1958, taken over from the Vienna Family, Court and State Archives (HHStA) in several phases in the 1970s and 1980s. The most important among them are the deeds of the counts of Celje and documents from several monasteries. It is worth stressing that these deeds were preserved per separate groups and were not sorted chronologically, which is important in view of previous citations.

The project of digitising was designed in 2004. On the basis of a public tender, an outsourcer was chosen. Digitising was performed with a Canon photo camera on the premises of the Archive of the Republic of Slovenia.

Many of you are probably wondering why we decided to take photographs rather than scanning, which is usual abroad. The answer is very simple. We believe, and the practice confirmed, that we have achieved much higher quality by taking photographs, which is especially the case with the photographs of seals. With appropriate illumination when taking the photos, we have achieved much greater depth and sharpness than is possible with scanning.

Programme ARMI for searching through fonds and collections

Search by several criteria

Before beginning the project, we set some basic criteria. Taking of photographs was performed on a centimetre grid covered with glass. By using glass, we obtained a flat surface and an image of higher quality. Each deed was recorded several times: from the front, the back and under the fold; the seals were recorded separately. To each first photograph a colour scale was attached. The whole deed, regardless of the size, was taken with seals. For libels, i.e. deeds written in the form of a book, photographs of all pages of each document were taken, including the blank ones.

We should also mention the technique for photographing big deeds. These were taken twice, the second time only the text without the colour scale and seals. Namely, this photo is intended for reading the text. Deeds broader than 60 cm were taken in two parts for better legibility, and deeds larger than 60 x 60 cm in four parts, and then assembled with a 1 cm overlap. Then the remaining pages were taken without the colour scale. Writing under the fold or elsewhere, if any, was taken separately. Each seal was recorded separately, regardless of the form in which it was adjoined to the deed (whether hanging or impressed). The last photo was always a photo of the back page of the deed.

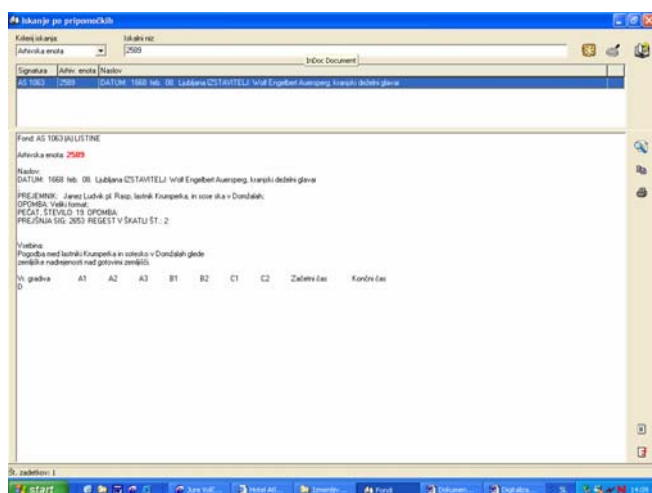| *Charter 1463 January 12, Vienna Neustadt*[8] | *Charter 1425 May 6, s. l.*[9] |

The project took two years, due to ensuring sufficient financial sources. The work was completed in August 2005. At the end, 5,283 pieces were digitised. These are mainly parchment documents, and among them some paper ones. We took 29,710 photos, of those 7,618 photos of seals. On average we took 4.82 photos per deed. We obtained a 62 GB database (in JPEG format), which is on 99 CD-ROMs. Photos of each archive unit (a separate deed) were then incorporated in one data file, i.e. a TIFF record with JPEG compression 1, in 24-bit colour depth. With this, we obtained a 45 GB digitised database of deeds. At the same time, around 150 parchment deeds from other fonds and collections were digitised, and virtual access created to them.

The total digitised database of deeds is available, based on a special programme called Armi (designed by Milan Bizjak) which enables viewing and searching by inventories, to all interested users in the reading room of the Archives of the Republic of Slovenia.

The clients can view the desired deed on a computer, while the original can be obtained only in exceptional cases. Similarly as with the cadastre, also in this case we have ensured suitable material preservation of cultural heritage. Original deeds are consequently exposed to light fewer times and there is less damage, but unfortunately the control over the condition of the documents is not so good any more. Namely, chemical processes still go on. Another advantage of the project is that with digitising the collection we got a good overview of the material condition of the collection, i.e. parchments and seals, and also their size was established.

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[8] ARS, AS 1063, Zbirka listin (Deeds Collection), No. 716: *Emperor Frederic III 1493) improves the coat-of-arms of the province Carniola so that the eagle gets, instead of a silver belt, a golden one and an emperor's crown. He did that in gratitude, as the Carniolan aristocrats in his dispute with the Archduke Albrecht VI († 1463) and in the siege in Vienna were among the first to come to his aid.*
[9] ARS, AS 1063, Zbirka listin (Deeds Collection), No. 4447: The Patriarch of Aquileia, Ludvik Teck (1412–1439), confirms to the Count of Celje, Herman II († 1435), the feudal estates which the patriarchs of Aquileia gave to his predecessors.
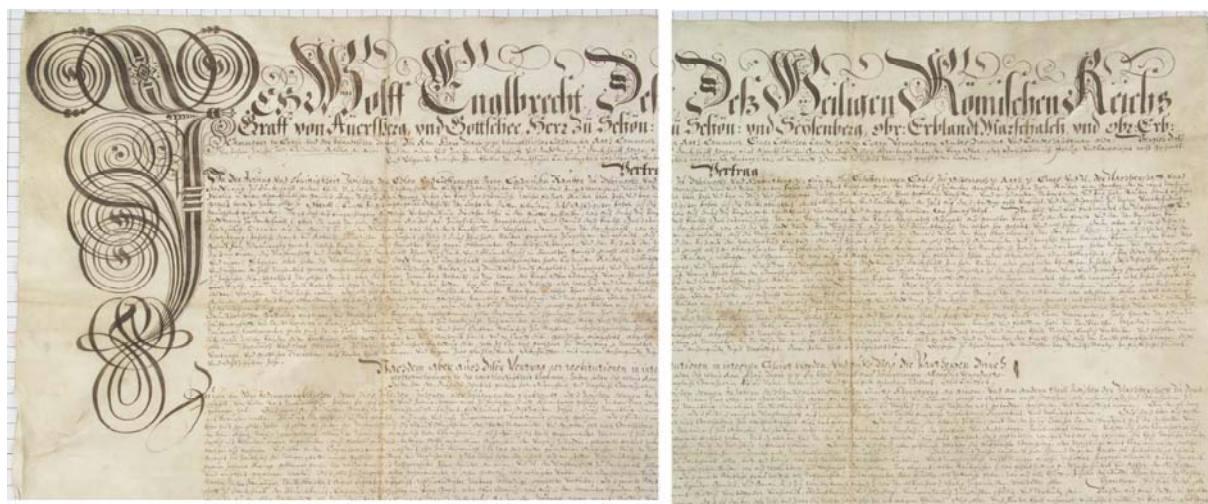
Charter 1668 February 8, Ljubljana[10]

With the completion of digitising the Deed Collection, the first phase was concluded. The second phase is making regests for the deeds for which they don't yet exist and editing the existing ones, while at the same time controlling the photos of each deed. In the third phase, access to the digital collection via the Internet will be provided. A virtual database with all necessary tables of content and accessories will be created. The Archives will thereby offer its materials for use to the broader circle of interested researchers or amateur historians. When similar institutions also enable access to their materials over the Internet, researchers will have quicker and cheaper access to the desired materials. That means that it will not be necessary to travel from archive to archive; there will be no unnecessary transport costs, and it won't be necessary to sit hour after hour in archive reading rooms. It will also be possible to more quickly identify and find archive material relating to the research topic in question, even if we didn't know it existed before.

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[10] ARS, AS 1063, Zbirka listin (Deeds Collection), No. 2589: *Contract between the owners of the estate Krumperk and a community in Domžale with regard to land superiority over certain plots of land.* This is the document with the highest number of preserved seals in the Archives of the Republic of Slovenia (19 of 21 pieces).

Charter 1440 August 23, Haimburg[11]	*Charter 1452 March 19, Vienna[12]*

An example of assembling a charter[13]

The Archives of the Republic of Slovenia are also participating in the project of digitising Central European monastery deeds. The carrier of the project is the Institute for Processing and Research of Church Sources (*Institut zur Erschliessung und Erforschung kirclicher Quellen*) from St Plten. On their website, http://www.monasterium.net, a demo version is presented, where we can admire 10 deeds from Slovenian monasteries, and in the future the deeds of Slovenian monasteries kept in the Archives of the Republic of Slovenia will be presented as well.

To this day several smaller, but no less important, archive collections have been digitised, including:
- Collection of fine arts (AS 455),
- Collection of aristocratic diplomas (AS 1064),
- Collection of diplomas of doctors and midwives (AS 1065),
- Collection of honorary diplomas (AS 1066),
- Collection of seals (AS 1070),
- Collection of coats-of-arms (AS 1071),
- Collection of genealogical trees (AS 1075), and
- five of the seven main books of the Book of Property for Carniola (Imenjska knjiga za Kranjsko) (AS 173).

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[11] ARS, AS 1063, Zbirka listin (Deeds Collection), No. 4491: Dispute arbitration and truce between the Roman King Friderik IV and the counts of Celje, represented by Queen Elizabeth of Hungary and Austrian Duke Albrecht VI regarding mutual hostilities, whereby the counts of Celje should return the confiscated land to the Lambergs, Erasmus of Kamen and Joseph Awer, and make peace with Count Stefan Machinensis, brother Martin and Count John.

[12] ARS, AS 1063, Zbirka listin (Deeds Collection), No. 4544: The chief governor of the land of Austria, Ulrik Eyzinger, making an alliance with the counts of Celje Frederic II and Ulrich II.
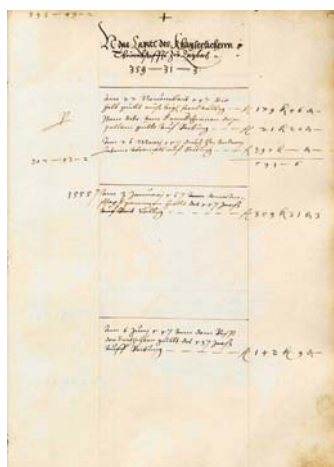
[13] See note No. 8.

Aristocratic Diploma Dinzl von Angerburg[14]

The coat-of-arms of the dukes of Auersperg (Awersperg)[15]

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[14] ARS, AS 1064, Zbirka listin (Deeds Collection), No. 24.
[15] ARS, AS 1071, Zbirka grbov (Collection of coats-of-arms), No. 16.

The main Book of Property for Carniola: taxes of the Ljubljana cathedral chapter[16]

To conclude with a few good characteristics of digitising, we can say that digitising archival documents is a big advantage. It is important and necessary. It enables the preservation of archive material for our successors and provides for the accessibility of archive materials to general public. And also taking into account the possibilities provided by the Internet, we can offer the digitised archive material to the whole world. In the end, this also means promotion of the archive, as well as the country in general. For the territory of Central Europe this is especially important, as this area has a common history right up to the beginning of the First World War!

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[16] ARS, AS 173, Imenjska knjige za Kranjsko (Book of Property for Carniola), No. 3 (1547–1554), extra No. 10.