



**Facilitating access to the fascinating past: technical issues in creating the CD *Riga in Cartographic Images 1621–1710***

**Inese Auziņa Smith**

Department of Information Science  
Loughborough University, UK  
E-mail: i.a.smith@lboro.ac.uk

**Rudīte Kalniņa**

Department of Restoration and Digitization  
National Library of Latvia  
E-mail: Rudite.Kalnina@lnb.lv

**Meeting:**

**121. Geography and Map Libraries, Science and Technology Libraries and Division of Special Libraries**

*WORLD LIBRARY AND INFORMATION CONGRESS: 75TH IFLA GENERAL CONFERENCE AND COUNCIL*  
23–27 August 2009, Milan, Italy  
<http://www.ifla.org/annual-conference/ifla75/index.htm>



**Abstract**

“*Riga in Cartographic Images 1621–1710* (Rīga 1621.–1710.gada kartogrāfiskajos attēlos)”, the electronic collection under consideration in this paper, is the second cartographic CD produced by the National Library of Latvia (NLL). Its publication was

a cooperative venture with the Museum of the History of Riga and Navigation and the Latvian Academic Library. The CD comprises 86 maps, plans and views of the city of Riga and its immediate environs. In order to make the contents available to a wider audience, English translations are provided for the introduction, titles, metadata and index of authors or creators. Technical and other issues relating to the cartographic materials, their contents, bibliographic information, searching, navigation and enlargement possibilities, scanning parameters, software, project costs and staff are discussed. Since materials in the Riga collection did not require restoration, examples of that activity are given from the first CD, called “*Latvia in Three Centuries of Maps: 1500–1800: Maps in the Collection of the NLL (Latvija 16.–18.gadsimta kartēs: LNB karšu krājums)*”.

---

## Introduction

In 2008, at the IFLA congress in Quebec, this Section’s papers looked at how maps provide a graphic journey through history. This year we are covering another aspect of what is essentially the same theme – culture. History and culture, culture and history – they are inextricable, the one cannot exist without the other. How is the culture of a place and time reflected by cartographic representation and what are the technical issues in creating the representation for use in the 21st century? Maps, plans and cartographic images all tell a story. Historical cartographic images tell of the culture of the past; they reflect the art, design customs and philosophy of the time, while showing the physical dimensions of the development of a particular place over time. The place represented in this paper is the city of Riga, the capital of Latvia, and the time period is the late 17th and early 18th century.

### MAP CDs PUBLISHED BY THE NATIONAL LIBRARY OF LATVIA



2

### *Latvia in Three Centuries of Maps 1500-1800*



**CD 1 -- *Latvia in Three Centuries of Maps: 1500–1800: Maps in the Collection of the NLL (Latvija 16.–18.gadsimta kartēs: LNB karšu krājums)***



Livonia / [Ortelius, A.]. – Mērogs [apm. 1:9,700,000]. – [Antwerpen, 1603].  
– 1 karte : daļēji iekrāsota ; pl. 80x110 mm, lp. 130x165 mm.

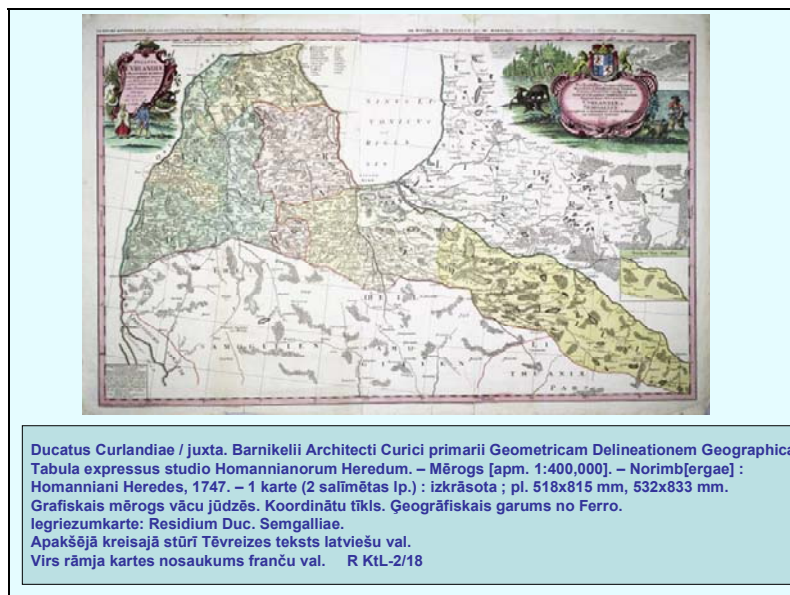
Ārpus rāmja: "Livonia" un nr.: "96".

Grafiskais mērogs jūdzēs.

Lapa no *Epitome theatri Orteliani* 1603. g. izdevuma angļu val.

Paspartū otrā pusē antikvariāta etiķete ar kartes avota bibliogr. aprakstu.

No R. Mužika kolekcijas. R KtL-2/110



Staff of the Department of Restoration and Digitization of the National Library of Latvia have produced two cartographic CDs, both with the support of the Culture Capital Foundation of Latvia (Valsts kultūrkapitāla fonds). The first was *Latvia in Three Centuries of Maps: 1500–1800*, which was based on Livonian maps in the private collection of Rt. Rev. Ringolds Mužiks (1914–2000), an avid Latvian collector of old maps and prints, who lived in London (UK). This collection of 913 items was donated to the NLL by the Latvian Documentation Centre (Catthorpe, England) in 2001–2002. It was characterized by Anda Juta Zālīte, Head of the NLL Cartographic Department, who said that: “In the context of the history of world cartography, maybe the maps in the CD are not particularly unique. Nevertheless, they are very significant in the history of cartography of Latvia.” The CD, published in 2002, combines all pre-19th century maps in the NLL collection, where the territory now called Latvia can be seen.

Coincidental with the time of donation, a number of stories about thefts of valuable library materials (including old maps) had appeared in the European press. Therefore, NLL librarians were loathe to give these maps to users, because some of them were A5 size and even smaller. This posed a dilemma: on the one hand, the library had received such valuable rare materials, but on the other, was it safe to inform users about them and make them available to readers? These concerns informed the decision to digitize the maps, publish a CD and also make them available online through the NLL digital library. It was also convenient that in 1999 the NLL had already purchased a large-scale scanner for digitizing newspapers, so they could also manage the scanning of maps.

## ***Tabula Ducatum Livoniae, et Curlandiae* before restoration**



6

## **Unrestored verso of *Tabula Ducatum Livoniae, et Curlandiae***



7

## ***Tabula Ducatum Livoniae, et Curlandiae* after restoration**



Tabula Ducatum  
Livoniae, et Curlandiae /  
recentior. incisa editaque  
per Gerardum Valck. –  
Mērogs [apm. 1:900,000]. –  
[Amsterdam, 1690]. –  
1 karte : izkrāsota ; pl.493  
x594 mm, lp. 510x617mm.  
Grafiskais mērogs vācu,  
franču un Livonijas  
jūdzēs un stundas ceļos.  
Koordinātu tīkls.  
Bibliogr. atzīme:  
"[Amsterdam, 1690]".  
Kt L1-1/120

8



# Die Hertzogthümer Curland und Liefland... before restoration

Karte Curland Liefland (Morgenspate)

Die Hertzogthümer Curland und Liefland

Ducatus de Florence, Rube, etc.  
von Offenberg  
1736

## After restoration

Die Hertzogthümer Curland und Liefland ... – Mērogs [apm. 1:3,000,000]. – Leipzig : J.G.Schreiber, [1770?]. – 1 karte : daļēji iekrāsota ; pl. 190x266 mm, lp. 212x292 mm. Grafiskais mērogs vācu jūdzēs. Taisnleņķa koordinātu tīkla gali. Kompasa virzieni.<sup>11</sup> Bibliogr. atzīme: “anno 1770” KtL-1/0/167

## CD1 – Restoration activities

Before scanning for the first CD, a few maps required restoration work. The most frequently found flaws or damage to the maps in the first CD included: tears along the edges; damage along folds; paper corroded by iron gall ink; torn parts mended with inappropriate adhesive tape or glue. A few maps had been coloured, but the colours were frequently not water-fast, which caused extra problems. Restoration is very detailed and delicate work, because damp paper becomes stretchy and fragile. Also, maps were often large. Joining of tears required particular precision. Restorers must be especially careful during the drying process, because rapid evaporation can cause wavy-type deformations in the paper, which are impossible to correct, so the work must be redone. Map restoration requires particularly meticulous work practice on the part of the restorer. Different types of Japanese restoration paper were used to fill-in missing patches and to strengthen the paper of the map. Images of maps before restoration show some of the difficulties met by the restorers. For example, from the front surface of the map of Livonia, it is hard to notice the damage caused by the ink. Only by looking at the verso of the map can it be seen that there was a complete loss of material in the places where the rivers had been drawn in by ink. Any paste-ons and cracks can also be seen only from the verso of the map.

## CD 2 – *Riga in Cartographic Images 1621–1710 (Rīga 1621.–1710.gada kartogrāfiskajos attēlos)*



## Introduction

The second NLL cartographic CD – *Riga in Cartographic Images 1621–1710 (Rīga 1621.–1710.gada kartogrāfiskajos attēlos)* contains the oldest cartographic images of Riga that are in the collections of the Museum of the History of Riga and Navigation (MHRN) and the Latvian Academic Library (LAL) and the National Library of Latvia. These three institutions were the CD's project partners.

## PROJECT PARTNERS

### Museum of the History of Riga and Navigation

*45 items (52%)*

### Latvian Academic Library

*29 items (34%)*

### National Library of Latvia

*12 items (14%)*



13

As with CD1, simple, pragmatic reasons also dictated why this CD was necessary. The Museum has an extensive collection of single copies of hand-drawn plans of Riga. Before any construction projects can start in the historic area of the Old Town (Vecrīga) and central Riga, which are of interest to any person researching the history of Riga, research through old maps is carried out about the location. Any historian of the history of the city also wants to see these cartographic materials. Therefore, the hand-drawn plans were under threat from frequent handling, because their paper is not very strong. It seemed that the only way to safeguard this valuable collection from wearing out was to forbid its use or to scan it. In addition, it was desirable that cartographic images of the chosen time period should all be together; hence, the inclusion of a selection from the NLL and the LAL as well. Although the Latvian State Historical Archives also have an extensive collection of cartographic images of Riga, it was not possible for the archive specialists to take part in this project.

## PROJECT WORKING GROUP



### Project Working Group

Project leader: Dr Rudīte Kalniņa, Head of the Department of Restoration and Digitization, National Library of Latvia

Compilation & text: Ingrīda Miklāva, Head of the Section for Historical Research and Exhibitions, Museum of the History of Riga and Navigation



Dr Margarita Barzdeviča, map researcher, Institute of Latvian History at the University of Latvia  
Digitization: Iveta Tiltiņa & Niks Kalniņš, National Library of Latvia  
English translation: Inese Auziņa-Smith, Department of Information Science, Loughborough University (UK)  
Design: Lita Paegle, National Library of Latvia

## Contents

This CD includes 86 maps, plans and views showing the city as a whole as well as its separate areas, streets, islands, buildings, and historic events. The earliest information available today dates from 1621 to 1710, the so-called Swedish period. In this period, the city of Riga and its environs are reflected in two ways: printed engravings aimed at the general public and hand-drawn plans and maps meant only for official use.

### ORGANISATION OF IMAGES

1. Cartographic images of Riga up to the middle of the 17th century
2. Plans of land plots and boundary plans
3. Cartographic images from the period of the Great Northern War
4. Plans and views of the Daugavgrīva coastal fort

15

The works are chronologically and thematically organized into four groups:

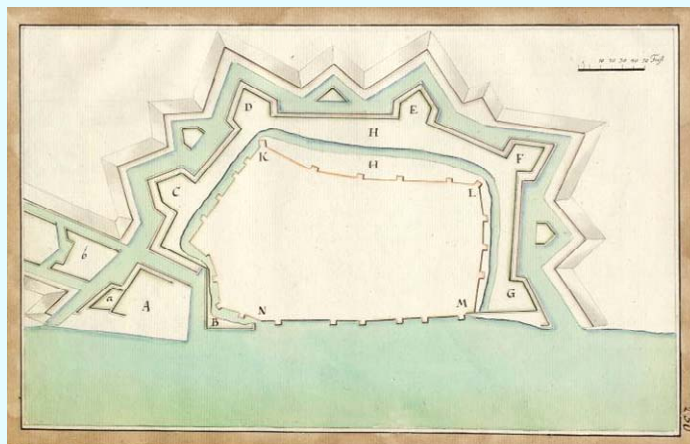
1. Cartographic images of Riga up to the middle of the 17th century
2. Plans of land plots and boundary plans
3. Cartographic images from the period of the Great Northern War
4. Plans and views of the Daugavgrīva coastal fort.

### PRINTED ENGRAVING



16

## HAND DRAWN PLAN of a proposal for Riga fortifications in the 1640s



In this period, the city of Riga and its environs are reflected in two ways: printed engravings aimed at the general public and hand-drawn plans and maps meant only for official use. At the beginning of the 17th century, maps and plans were mainly for military use, but by the middle of the century, plans of land plots started to be produced, which were necessary for land management and were usually hand drawn or in manuscript form. The historical views of Riga are mainly prints, made by the technique of copper engraving.

### METADATA

**Nosaukums:** [17. gs. 40. gadu Rīgas nocietinājumu projekts]

**Autors:** Nav norādīts, J. K. Broces pārzīmējums

**Gads:** Nav norādīts

**Vieta:** [Rīga ?]

**Mērogs:** 50 pēdas = 2,5 cm

**Orientējums:** [ZA virzienā]

**Tehnika:** Zīmēts

**Materiāls:** Papīrs, tuša, kolorēts

**Izmēri:** Lapa 320 x 207 mm, attēls 305 x 193 mm

**Atrodas:** LAB, R 4970 Brotze J. Ch. Monumente... – 9. sēj. – 236. lp.

[Apraksts](#) [annotation]

**Title:** [Plan of a proposal for Riga fortifications in the 1640s]

**Author:** Unknown, copy by J. Ch. Brotze

**Year:** Not given [original in the 1640s]

**Place of publication:** [Rīga?]

**Publisher:** Unknown ???

**Scale:** 50 feet (*Fuß*) = 2.5 cm

**Orientation:** [looking NE]

**Technique:** Drawn

**Material:** Manuscript, Indian ink, col.

**Size:** page 207 x 320 mm, plan 193 x 306 mm

**Location:** LAB R 4970 Brotze, J. Ch. Monumente... , vol.9, p.236.

Key (after J. K. Brotze): A – castle; a – castle fortifications, b – castle new fortifications. B – Miesnieks bulwark (Brotze's term for bastion); C – Jēkabs bulwark, approach through Jēkabs gate; D – Smilšu bulwark; E – New gates bulwark; F – Pirts bulwark; G – Mārstaļu bulwark; HH – so called interrampart zone, J – Rīdzņa or Rīga stream; K, L, M, 118 – old city wall.

### Metadata and searching

The **metadata** (descriptions) of the cartographic images include: the title in Latvian (a translation or descriptive title of the territory or event); original title (German or Latin); size; orientation of the image; author or creator of the plan or map; publisher, date and place of publication; physical description (manuscript or engraving, material, scale, size); institutional identifier and shelfmark. An annotation (only in Latvian) gives information about the territory or event, its purpose, location, activity and objects, and, if known, the reason for creating the image. So that information about the cartographic materials of Riga can be accessible to a wider audience, the metadata for each image was translated into English.

There are three appendices:

1. Index of authors or creators
2. Index of place names, comprising places and objects that are reflected in more detail in the plans
3. Bibliography.

## SEARCHING AND NAVIGATION

- In the four thematic groups
- Index of persons (authors or creators)
- Index of place names

19

## THEMATIC GROUP 3

### Riga during the Great Northern War

	<p><b>Rīga ar priekšpilsētām un projektētajiem jaunajiem nocietinājumiem</b> (Die Stadt Riga mit ihren Vorstaetten und projectirten Neuen Wercken). Gravīras latvijā pusē apakšā karšuā uzraksts: Die Stadt Riga in Livland)</p> <p>Autors: Johans Strömbeks (vēlāk arī G. Bodenērs, K. G. Kiliāns) Gads: 1700 Izdošanas vieta: Auzsburģa Mērogs: Nav norādīts Orientējums: Ar kompasu norādīts DDR virzienā Tehnika: Gravūra Matērija: Papīrs Izmēri: Iga 190 x 310 mm, attēls 160 x 200 mm Atrodas: LNB, R B-878, R Kst 2/48, RVKM, inv. Nr. VRVM 33213</p> <p><a href="#">Apskats</a></p>
	<p><b>[Rīga ar apkārtni 1700. gada poļu un sakšu aplenkuma laikā]</b></p> <p>Autors: [Johans Litens ?] Izdovējs: S. Fābers Gads: 1705 Izdošanas vieta: Frankfurte un Leipciģa Mērogs: Nav norādīts Orientējums: [DR virzienā] Tehnika: Gravūra Matērija: Papīrs Izmēri: 153 x 375 mm Atrodas: LNB, R Kst 2/51, R NV-19L sk. arī LAB, R 4965 Brozē J. Ch. Monumente... - 4. sēj. - 4. l.</p> <p><a href="#">Apskats</a></p>
	<p><b>Skice situācijai pie Rīgas no Augustburgas cietokšņa līdz Jumpramuižai</b> (Entwurf der Situation bey Riga von der Vestung Augustsburg bis an den Jungfernhof)</p> <p>Autors: Nav norādīts</p>

21

## INDEX OF PERSONS (AUTHORS OR CREATORS)

**Kartogrāfisko attēlu izgatavošanā iesaistīto personu rādītājs**

<b>Bilmanis</b> Andress (Billman, ? - 1698), Zviedrijas mēmsēks, fortifikāciju inženieris	
<b>Bodenērs</b> Gabriels (Bodenehr, 1673-1776), gravieris	
<b>Broce</b> Johans Kristofis (Brotze, 1742-1823), Baltijas senātnes pētnieks, skolotājs	
<b>Dallins</b> Johans (Dallin), Holsteinas hercogistes kapteins un mēmsēks	
<b>Dālberga</b> Ēriks (Dahlbergh, Dahlberg, 1625-1703), Zviedrijas fortifikāciju inženieris, arhitekts, Vidzemes ģenerālgubernators	
<b>Fābers</b> Samuels (Fabe, 1657-1716), Nīmeburgas luterāņu ģimnāzijas Aegidianum rektors, publicists	
<b>Gločs</b> Ludvigs Kristofers (Glotsch, ? - 1719), gravieris	
<b>Krails</b> Georgs Ginters (Krols, Krels no Bambergas; Kraill, Kroll, de Bemeberg, 1584 - ?), Rīgas pilsētas inženieris, Zviedrijas fortifikāciju inženieris	
<b>Kiliāns</b> Georgs Kristofis (Kilian, 1709-1781), gravieris, grāmatu izdevējs	
<b>Litens</b> Johans (Lithen, 1663-1725), gravieris, Zviedrijas armijas virsnieks	

20

**Searching** the CD can be carried out by thematic section, place or author/creator index, navigating within each section. Because the majority of materials in the CD are from the Museum of the History of Riga and Navigation, one of the project participation requirements of the Museum was that data protection for the cartographic materials should be at a high level. This means that the contents of the CD are not freely available online through the Internet. Access may be through purchase of the CD or at a library participating in the Unified Library Information Network of Latvia. For ease of viewing details, it is possible to enlarge each image, but only by one variant (level). This restriction is another way to protect the CD from unfair use.

**COMPLICATIONS! DIFFICULTIES!  
PROBLEMS!**

**PLACES**

- Locating a place on a modern map sometimes difficult
- Confusion with place names caused problems

**LANGUAGE / TRANSLATING**

- Place names (again!)
- Differences in language rules
- Archaic title words
- Names of professions

22

### Complications and difficulties

Two problems remained unresolved. Initially it was hoped that it would be possible to mark the location of the historical image on a map of Riga as it is now. This hope was never fulfilled because historians and map specialists could not agree about where some of the locations are today. The other difficulty, linked with the first, was that specialists also disagreed about correspondence of some 17th and 18th century place names with modern place names. However, in order to avoid inaccuracies and time-wasting discussions, the project working group decided not to try and pinpoint historical locations on today's map.

### Language/translating problems

The project working group decided that English translations should be provided not only for the introductory text and CD cover leaflet, but also for all metadata and the author/creator index. The annotations have not been translated, but if the demand for these is high, separate funding could be sought for a translation project.

Nevertheless, translation into English was not always as straightforward and caused more problems than anticipated. Dozens of e-mails were exchanged between the translator and the project manager, who in turn contacted the map specialists for clarification, if necessary. For example:

1. **Place names** that could not be translated and were, therefore, left in Latvian.

Title: *Map of the city pastureland and its land plots, as well as land plots of the subdivided Jumpravmuiža ...*



Jumpravmuiža = Jumpravas (maidens) + muiža (estate)

\* tautology if translated as Jumpravmuižas Estate

\* nonsense if translated Maidens' Estate

2. **Differences in language rules** caused a number of misunderstandings and even amusing differences of opinion. In such cases, Latvian rules were observed in the Latvian text and English custom in the English translation. For example, points of the compass:

Latvian: ziemeļaustrumu-austrumi (ZAA) = north-east east

English should be: east north-east (ENE)

3. **Archaic title words** that didn't seem to have an equivalent (and couldn't be found in a Latvian or an English dictionary), complicated by the fact that the originals might be from old German, caused another flurry of e-mail discussions.

Original German: *Charte der Landvogtey und Übersetzer Länder bey dem Thorn auf...*

Latvian: Plāns landfogtejas un parcēlāju gruntsgabaliem pie Torņa..

English: Plan of the **baillif's (?) or bailiwick (?)** and **ferryman's (?)** land plots near Tornis ...

4. **Names of professions** (author/creator index):

Latvian: Svenburgs Johans ( Schwemborgh, Schenburg, Swenburg,? – 1679)

Rīgas fortifikāciju inženieris, **konduktors**

English: Svenburgs ... (Riga city fortification engineer, ???)

Nowadays this “**konduktors**” person would be known as the “**project manager**”

These are example of just some of the many queries brought up during the translation process.

**DIGITISATION**

- **Scanning**
- **Using the NLL Digitizer's Handbook**
- **Adobe Photoshop**

23

## Digitization

Staff of the NLL Department of Restoration and Digitization have considerable experience with **scanning** library materials and data processing. Ten years ago the NLL

bought the first scanner, a table for materials to be scanned, and accessories to ensure careful scanning. The necessity to scan varied objects (newspapers, books, maps, posters, printed music) provided excellent experience, which enabled them to develop the most advantageous conditions for scanning. They were able to scan any objects without repeating well known mistakes.

Taking into account recommendations of experienced EU specialists, creators of the Latvian National Digital Library developed, and tested in practice, a set of optimum scanning parameters in cooperation with librarians, and partners in museums and archives. Its ***Digitizer's Handbook*** provides guidelines for library staff and partner institutions, so as to minimize avoidable errors. The *Handbook* is available in Latvian < <http://www.lnb.lv/lv/digitala-biblioteka/partneriem/ciparotaja-rokasgramata> > and English < <http://www.lnb.lv/en/digital-library/for-partners/digitizers-handbook> >.

## DigiBook SCANNER



- Digital camera i2S
- Resolution 300 – 400 dpi with full colour 24 bit-u depth TIFF

[www.i2s-bookscanner.com](http://www.i2s-bookscanner.com)

24

For scanning maps, it instructs that the minimal requirements are 200-300 dpi, but the recommended quality is 300-400 dpi with full-colour depth of 24 bit-u. The guidelines include permitted enhancements: contrast standardization, minimal tone and colour improvement, sharpening of the image. Having this *Handbook* meant that any object could be scanned without the need for extra experimentation.

After scanning, **Adobe Photoshop** was used to reduce the unnecessarily large file size after scanning, by evening out the edges, cutting out excessive blank spaces, etc., leaving approx. 2mm free space in the archive file. Miniatures and **Jpg** and **pdf** files were produced for inclusion in the layout design. The programmer completed the disc layout by incorporating the metadata and cartographic images.

PROJECT COSTS			
• Project planning	LVL 150.-	213.4	EUR
• Selection of cartographic materials	40.-	56.9	
• Scanning <i>(part of NLL work schedule)</i>			
• Information processing	240.-	341.5	
• Preparation of metadata	96.-	136.6	
• Preparation of introduction, annotations and indexes	520.-	739.9	
• Text editing	100.-	142.3	
• Translation	100.-	142.3	
• Data processing and CD preparation	250.-	355.7	
• Design of CD cover and labels	100.-	142.3	
• CD cover preparation	300.-	426.9	
• Production of CD, project management	104.-	148.0	
	<b>Total</b>	<b>2000.-</b>	<b>2845.8</b>
<i>1 eur = LVL 0.7028 on 04.06.2009</i>			

25

## Project costs

Publication of the CD was supported not only by the Culture Capital Foundation of Latvia (as for CD1), but also by Riga City Council Department of Culture. The cost of the project was 2000 Lats (2845.8 Euro @ 1 Ls = 1.423 E, 04.05.2009) and it lasted two years.

CONCLUSION – PLANS FOR THE FUTURE
• <b>Online access through the National Digital Library</b>
• <b>ERDF project with Toponymy Laboratory of the Cartography Dept of the Latvian Geospacial Information Agency</b>
• <b>Project to scan materials about Andrejsala</b>

26

## Conclusion – the future?

A number of related projects are envisaged. It is hoped that the cartographic images on this CD will be available online as part of the National Digital Library. The NLL has an agreement with the Toponymy Laboratory of the Cartography Department of the Latvian Geospacial Information Agency to purchase a database for the digital library. As part of an ERDF project, in pilotproject form, it is intended to include geotoponymic information into the images of the project *Zudusī Latvija* (Lost Latvia), so that place names in all their changes through historical time periods can be included and also linked to maps, thus making them searchable by toponymic variations. It is also intended to start scanning materials about Andrejsala, one of Riga's islands.

The CDs described in this paper can be used for research, teaching the history of Riga in schools and universities, organizing tourism and excursions. They are accessible to amateurs and specialist alike. As interest in ancient plans grows, the opportunity to use them electronically will facilitate the preservation of this unique historical and cultural witness for future generations.