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Eine Woche Handschriftenstudien mit dem digitalen Workspace „mirador@ubleipzig“

Zusammenfassung

Im 6. Alfried Krupp-Sommerkurs für Handschriftenkultur, der im September 2017 an der Universitätsbibliothek Leipzig stattfand, wurde zum ersten Mal ein digitaler Workspace eingesetzt. Dieser basiert auf der IIIF-Technologie und erlaubt es, Digitalisate aus verschiedenen Institutionen in eine personalisierte Arbeitsumgebung zu laden sowie Annotationen und Kommentare zu bestimmten Bildregionen einzufügen und abzuspeichern. Nach dem Sommerkurs wurde eine Evaluation zur Usability des Workspaces unter den Teilnehmerinnen und Teilnehmern durchgeführt, die ein positives Echo zeigte und wichtige Impulse zur Weiterentwicklung der Software gab.

Schlüsselwörter

Digital Humanities; Handschriftenkunde; IIIF; Mirador

A week of manuscript studies with the digital workspace „mirador@ubleipzig”

Abstract

In the 6th Alfried Krupp Summer School for Manuscript Culture that took place in September 2017 at the Leipzig University Library, we introduced an IIIF-based digital workspace, which allows to display and examine digitized images from different institutions in a personal workspace and to make and save annotations pointing to specific regions of the images. After the Summer School we performed a usability evaluation among the participants, who gave a very positive feedback and precious hints for the further development of the software.

Keywords

Digital Humanities; Manuscript Studies; IIIF; Mirador

Inhaltsverzeichnis

1 Introduction

The International Image Interoperability Framework (IIIF) provides a technology that not only conveniently allows the interoperable presentation of high-resolution images and metadata – it also offers new methods for realizing scholarly work in digital working environments in an extremely user-friendly way. The Leipzig University Library (Universitätsbibliothek Leipzig – UBL) has chosen the IIIF as the technology foundation to update the presentation of its high-quality image and metadata.

A joint initiative of renowned memory organizations, including Stanford University Libraries, Cornell University, the British Library, Bodleian Libraries and the national libraries of France and Norway founded IIIF in 2011 with support of the Mellon Foundation. Today, the IIIF community is supported and developed by numerous museums, libraries and archives around the globe including various institutions in Germany. IIIF follows a strictly interoperable approach which qualifies it as the technology of choice to implement interinstitutional research environments.

The UBL sees itself as a partner in science and scholarship and plays an active role in various research projects. The UBL is part of the scholarly infrastructure in Germany, not only by leading its own cataloguing, digitization and infrastructure projects, but also by taking part in various cooperative research projects with different faculties of the University and external scientific institutions. In its function as a research library it supports scholars researching in the field of extensive special collections by providing materials and information about the collections and by offering the necessary working environments. Furthermore, the UBL conducts specialized research in manuscript studies.

Therefore, the UBL has taken first steps towards digital working environments for historical materials on the basis of IIIF. Based on the mirador@stanford[1] software (originally developed by Stanford University Libraries) the UBL designed an experimental working environment for digitized manuscripts, which was used productively in a controlled environment during the Summer School on Manuscript Culture in 2017. During this testing phase, which was limited in time and availability, experience was gained in the technical field as well as in terms of the usability and requirements of scholarly work.

1 https://github.com/sul-dlss/mirador_sul (5.12.2017)

2 Alpha software „mirador@ubleipzig”

With the recent implementation of IIIF, UBL joins prominent libraries in an overarching goal to openly provide digital resources based on a common set of APIs. The IIIF is seen as a solution to domain-specific image presentation and metadata formatting which has made the comparative study of digitized historical sources problematic and federated resource discovery nearly impossible. All of UBL's processed digital images are now automatically rendered IIIF compatible. Current examples can always be viewed at the digital collections of the UBL.[2] The use of IIIF digital data will soon be possible via the catalog of the UBL.

Mirador is an image viewer that supports the IIIF APIs. The viewer can juxtapose high-quality images from disparate remote sources. The alpha software „mirador@ubleipzig” is an extension of the viewer that allows advanced functionalities including authenticated user sessions to enable state persistence. Saving state, also known as workspace bookmarking, is an indispensable feature for collaborative scholarship, as it provides sharable links to specific images or fragments of images.

The annotation functionality of „mirador@ubleipzig” also extends the base Mirador implementation, as it provides create, update and delete methods to a RESTful persistence endpoint API. This API has been implemented with Ruby on Rails. The annotation data format, a prototype version of the Web Annotation Data Model[3], is stored as JSON-LD, so that it can be post-processed and queried as linked data.

The primary aim of the Web Annotation Data Model is to provide a standard description model and format to enable annotations to be shared between systems. The promise of the semantic web that includes authority file or persistent identifier referencing for citations, annotation tagging from controlled vocabularies and dynamic (i.e. faceted) in-context resource selectors, can be fully realized with an annotation interface that depends on this data model.

The current Mirador viewer interface includes an annotation tool plugin that allows a user to select a target area or point on an image (referred to as a resource “segment”) and associate it with an annotation body that can be a link to an external resource, a tag, or an embedded text description. The Mirador viewer implementation of the Web Annotation Data Model remains a work in progress, though with „mirador@ubleipzig”, the potential use cases for this technology can be explored and specific functionalities can be developed.

3 Summer School on Manuscript Culture 2017

The 6th Alfried Krupp Summer School on Manuscript Culture „Handschriftenkultur des Mittelalters für Fortgeschrittene“ (Medieval manuscript culture for advanced and graduate students) was held at the UBL on September 17-23, 2017.[4]

2 https://www.ub.uni-leipzig.de/forschungsbibliothek/digitale-sammlungen/ (5.12.2017)

3 https://www.w3.org/TR/annotation-model/ (5.12.2017)

4 https://www.ub.uni-leipzig.de/forschungsbibliothek/sommerkurs-handschriftenkultur/ (5.12.2017)

It has been supported by the Alfried Krupp von Bohlen und Halbach-Stiftung and the Mediävistenverband e.V.

The Summer School is international and interdisciplinary. This year, 21 students from seven countries attended the event and learned under the supervision of international specialists about various research fields that relate to manuscript studies, such as paleography, codicology, art history, historical linguistics, and musicology. The concept of the Summer School relies on two pillars. In the mornings, the students were provided with introductions to each field by the specialists. In the afternoons, they worked with the original manuscripts themselves, applying their newly acquired knowledge in practice. In small groups of two or three they worked on manuscripts from the UB Leipzig that had been selected by the staff of the Competence Center for Manuscript Studies (Handschriftenzentrum)[5] because they have not yet been scholarly catalogued. The students were supposed to analyze the manuscripts and to create short scholarly descriptions.

We considered the Summer School as a suitable scenario for testing the usability of the new workspace „mirador@ubleipzig", since it brought together a sufficient number of test persons generally interested in historical documents, but who are no specialists neither in manuscript studies nor in computer science; that is to say, an average user target group. The Summer School was held in German language, therefore we also set up the workspace in German. Since there are not many text elements in the interface, they could easily be translated in other languages for other use cases. We expected that the workspace will facilitate their work by allowing them to make annotations directly on the digitized image of the manuscript where they detected interesting aspects, instead of taking notes on paper or in a text file. Furthermore, the workspace provides zooming functionalities for viewing image details and the possibility to compare images from different manuscripts.

4 Usability Testing and Evaluation

During the Summer School, the students used the „mirador@ubleipzig" workspace to create annotations containing their findings about the manuscripts. They worked simultaneously with the original manuscripts and their digitized images displayed in the „mirador@ubleipzig" viewer. While it is important to examine the physical book to find out about the structure of the quires or the watermarks, other tasks can be more comfortably performed in the digital viewer, like paleographical analysis by comparing different manuscripts on a high zoom level. Thus, the digital workspace supported the students in their work with the manuscripts, but it also gave them the possibility to write down their findings instantaneously and to link to the specific spot of the manuscript where they discovered them, e.g. by marking the shape of a specific letter and annotate it as characteristic for a certain script. This way of working seems very convenient especially for the task of manuscript analysis and description, since there are many different discoveries that can be made simultaneously on one manuscript page, e.g. paleographical

5 http://www.handschriftenzentren.de/ (5.12.2017)

identification by finding characteristic letter shapes, detection of the scribe's dialect by noticing regional spelling or expressions, or clues about the manuscript's provenance through library stamps. Instead of writing down all this information in an unstructured way, the students could make their annotations directly on the digital image of the manuscript page.

The outcome of scholarly manuscript analysis normally is a scholarly manuscript description, i.e. a continuous text with a specific structure. That means, after the analysis of the manuscript is done, the disparate discoveries and annotations have to be merged into a structured text file. Therefore, we also provided the students with shared documents containing the basic structure of a manuscript description, and we linked these text documents to their workspace.

For their specific needs, we customized the „mirador@ubleipzig" workspace as follows: We created a collection for each group, comprising the manifests of the manuscripts they worked on, and the thematic workspaces for their annotations on paleography, codicology, decorations, provenance etc. Furthermore, we provided the students with collections of comparison material for the paleographical analysis by importing IIIF manifests from other libraries.

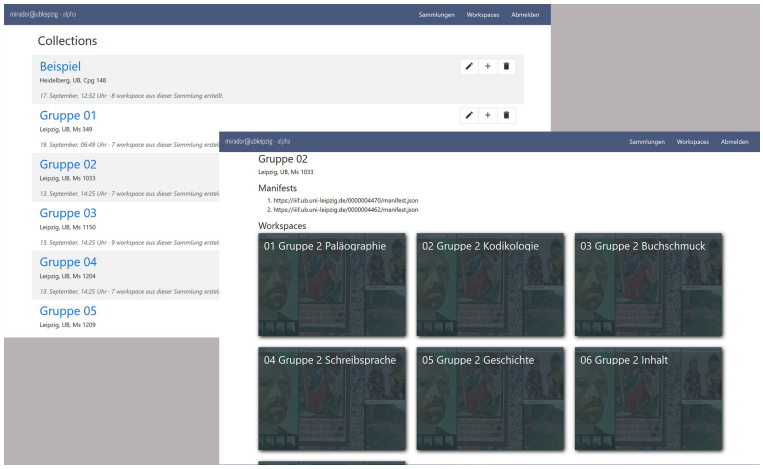

Fig. 1: „mirador@ubleipzig"

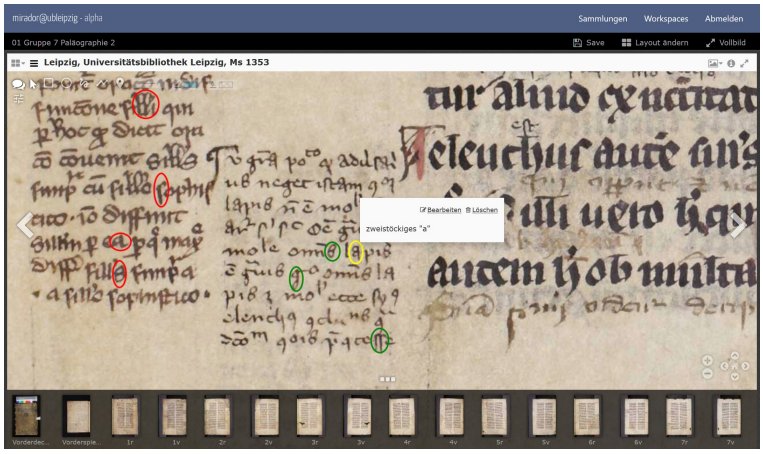

Fig. 2: Annotations

At the beginning of the Summer School, we gave the students a short introduction to the „mirador@ubleipzig" workspace and then let them explore it independently. During their work, they could always ask staff members for assistance. At the end of the week, the students presented their research outcomes using the workspace.

Fig. 3: Presentation of the findings

It was a challenge for the students to learn to work with original manuscripts and to get used to the digital workspace at the same time. We observed that the students reacted in quite divergent ways to this challenge. Some adapted very easily to „mirador@ubleipzig" and liked to work with it, while others were more reluctant and sometimes overstrained or frustrated by the technical problems they encountered. But in general, they seemed happy to be in the front line of the technical development in the digital humanities field, by testing a newly developed software.

After the presentations, we asked for the students' feedback on their experience with „mirador@ubleipzig". We created an evaluation form that contained four questions with check boxes and three free text questions. Out of the 21 students who attended the Summer School, 18 participated in the evaluation.

The four check box questions were:

Q1 (usability): How is the intuitiveness of using the workspace?

Q2 (structure): How clear is the structure of the interface?

Q3 (annotations): How well did you get along with the annotation functionality?

Q4 (ease of work): Did the workspace ease your work?

The students had five possibilities to answer to the questions, reaching from "very good" to "very bad". Remarkably, the rating "very bad" was never given. An overview of the students' answers is shown in the chart below.

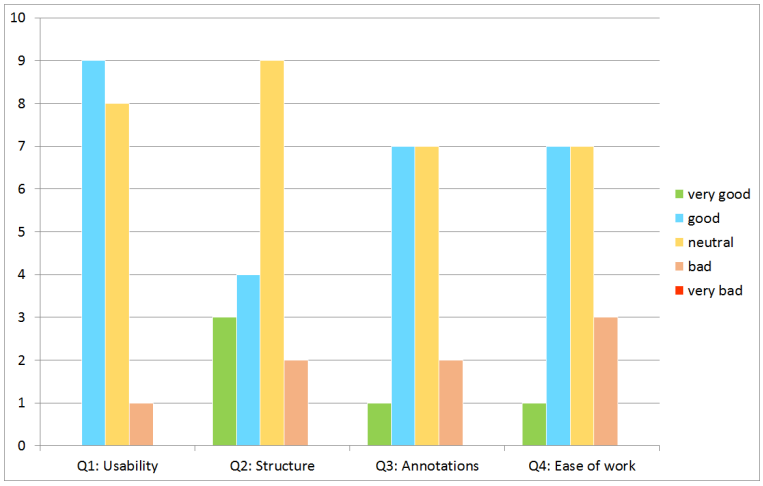

Fig. 4: Evaluation results by questions

In general, the students were rather positive about the workspace. The usability was rated as “good” by half of the students, and as “neutral” by most of the others. Only one student rated it as “bad”. Considering that the students only got a short introduction and explored the workspace mainly by themselves, this result shows that the workspace is quite easy-to-use and intuitive.

The structure of the interface was rated “very good” or “good” by seven students, “neutral” by nine and “bad” by two. In this question, the students evaluated the customized structure that we prepared for them (thematic workspaces, collections of comparison material). Some of the negative answers here could be influenced by the fact that many students didn’t make use of the different thematic workspaces and were maybe even disturbed by them – they preferred to make all their annotations in one workspace. On the other hand, we have the biggest number of “very good” answers here out of all four questions, so we conclude that in general, the structure of „mirador@ubleipzig” is clear and helpful.

The annotation functionalities were rated as “good” or “neutral” by most of the students. Considering the work in progress state of the annotation functionalities and some severe drawbacks such as the lack of search possibilities, this result seems rather encouraging.

The question that was asking if the use of „mirador@ubleipzig" made their work easier got the worst overall rating, which is not surprising since the students were confronted at the same time with a new research field (analyzing original manuscripts) and a digital workspace that was previously unknown to them. Even experts who are used to work with manuscripts would need some time to familiarize themselves with the workspace before they would say that it makes their work easier.

We also investigated the students’ judgement about the workspace by sorting the answers by participants. Remarkably, the students were quite consistent in their judgement. There was a group of five students who were very positive. They answered one question with “very good” and at least one further question with “good”, and no question with “bad”. Another group of eight students answered at least one question with “good” and the other(s) with “neutral”. These students were rather positive, but not enthusiastic about the workspace. Another five students

answered at least one question with “bad”. Thus, they were rather negative about the workspace. There was no student who gave both “very good” and “bad” ratings. The distribution seems quite normal – two smaller groups that were either very positive or negative and a broader center span of rather positive and neutral answers. However, considering the challenges and technical problems the students met, like the lack of search possibilities within the annotations or failures during the image loading or saving process, the positive tendency of their response is noteworthy and encouraging.

The three free text questions were:

- What additional functionalities would be nice to have?
- Were there problems that disturbed your work or did you notice specific bugs?
- Further comments

All participants answered at least one of the free text questions. They gave detailed feedback that is very valuable for the further development of „mirador@ubleipzig". The most frequently mentioned topics include navigation issues, categorization and search functionalities for the annotations, and export functions.

Currently, the navigation within a manuscript is only possible by scrolling through the thumbnails of the pages. When dealing with large manuscripts, it would be convenient to jump to a specific page by entering its number in a slot. The navigation between collections and workspaces also still needs improvement. Until now, there is no possibility to create links between workspaces or to jump from one workspace to another without going a long way through the collections menu.

For the annotations, there is an implemented tagging function to create categories of annotations. However, there is currently no functionality to group and show annotations with specific tags, which could facilitate the work a lot. The students also suggested to have pages with annotations marked in the thumbnails’ overview. There is no possibility to search the annotations with text queries, which would be useful to retrieve all annotations concerning a specific topic or containing a certain word.

Some students also mentioned that they would like to work on a text document besides the image-based workspace, since the final output of their work is supposed to be a manuscript description in form of a continuous text. We tried to cover this need by integrating links to shared text documents as mentioned above, which is of course only a workaround. The students also wished for export functions for the annotations. This requirement has been partly solved during the Summer School. We implemented an export function which allows to show all annotations together with the image fragment that they point to.

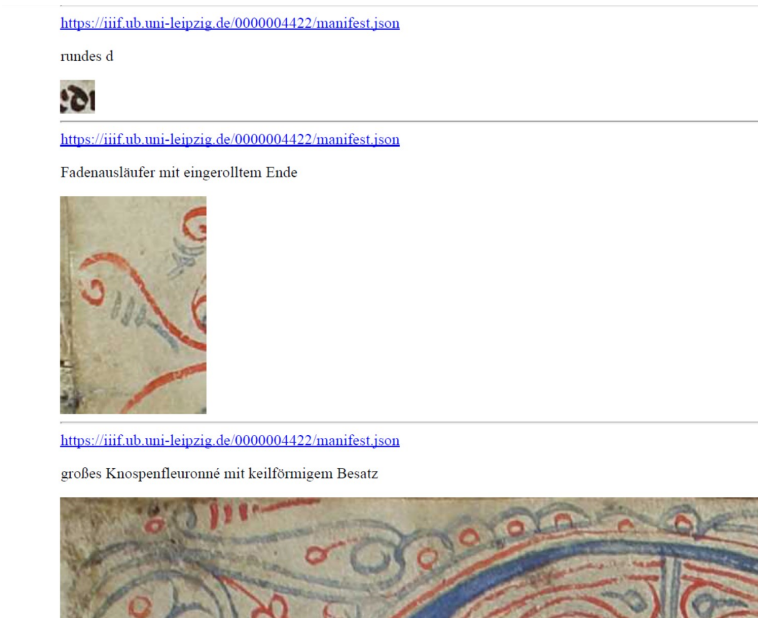

Fig. 5: Annotations export

In addition to these major topics, the students reported many smaller issues and also gave us inspiring ideas for the further development of the digital workspace.

Even if there was a considerable amount of technical issues due to the work-in-progress state of the „mirador@ubleipzig" software, these difficulties didn't encumber the students' work in a way as to influence their judgment about the workspace negatively in general. The students rather recognized the benefits of the workspace and appreciated to be involved at such an early stage of the development of a new digital tool.

5 Future Work

The future of the IIIF looks promising, though it has proven to be challenging for early adopters and interface developers to implement a rapidly evolving set of standards. As a formal protocol is achieved through process iteration and community dialogue, the APIs will stabilize and the tools that depend on them will become increasingly more powerful and robust. The next version of the IIIF Presentation API version 3.0 will both expand and restrict the original data model. Until its finalization, there will remain some uncertainty among developers as to the actual scope of the changes. Certainly, Mirador will have to adapt to the new standard just like all institutions that have built manifest production processes on the older APIs. A constant churn is nonetheless an accepted component of "the latest" in software development. Stable platform APIs can take many years to evolve to maturity.

The benefits of linked data technology have yet to be widely propagated among the scholars in the humanities, as unlike in natural sciences and life sciences like pharmacology,[6] vast digital

6 https://www.openphacts.org/ (5.12.2017)

resources of historical documents remain obscured in schema constrained “black boxes”, a legacy of early institutional library digitization initiatives. Fortunately, the IIIF and linked data experts are working together towards a realization of tools and methods that enhance the possibilities of scholars to discover and share new findings.

Especially for the field of manuscript studies, a digital workspace in which the scholars can combine digital images from different sources has huge advantages. It allows to directly compare for example manuscripts now owned by different libraries but originating from the same medieval scriptorium, or to re-combine several dispersed fragments from the same manuscript. There are already several digital manuscript libraries and projects using IIIF and Mirador technologies, e.g. e-codices[7] and Fragmentarium.[8] But until now, they do not provide the possibility to generate and to save individual collections and workspaces. This aspect stands in the foreground of the „mirador@ubleipzig” workspace.

The first usability test has shown its promising potential and encourages us to develop it further. The „mirador@ubleipzig” annotation API and workspace extension depends on the upstream “ProjectMirador”[9] viewer interface and annotation tool plugin. The roadmap for future extension development is therefore entirely constrained by the core “ProjectMirador” implementation of the Web Annotation Data Model and the Presentation API. The status of Mirador development is noted with bi-weekly meeting notes in a Google Document.[10] It is currently deemed prudent to defer modifications of the upstream implementation to the core Mirador development team rather than to maintain a divergent application.

The Leipzig University Library will continue to expand the use of IIIF in both project and institutional contexts. The Library intends to continue and expand its commitment in developing Mirador and other IIIF related software components in a strictly community oriented way. The advantages of interoperability and the ease with which Open Data can be made available should be the foundation of UBL’s services. Particular attention will be paid to the development of digital work environments in order to strengthen the library as an infrastructure service provider for research and teaching and to position itself in the age of digitization.

7 http://e-codices.ch/ (5.12.2017)

8 http://www.fragmentarium.unifr.ch/ (5.12.2017)

9 https://github.com/ProjectMirador/mirador (5.12.2017)

10 https://docs.google.com/document/d/1wWozmLxUsN7QRWzekiIMjjuShhDIsJw0P0IIaiARSa8

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