Abstract
From the perspective of users three aspects are essential for the quality of library online services: the performance, the usefulness and the usability (Tsakonas & Papatheodorou, 2006). The usability expresses the quality of interactions between users and a system. For conducting usability evaluations a wide spectrum of methods can be used. A good overview of usability evaluations of library websites is provided by Kupersmith (2012). Also Fagan (2010) provides a literature review about usability studies of faceted browsing, which is a common feature of modern online catalogues. According to those papers heuristics are a widely used instrument to assess the usability of library websites (e.g. Aitta et al., 2008; Yushiana & Rani, 2007; Manzari & Trinidad-Christensen, 2006). However, such heuristics are usually kept rather generic. Therefore extensive knowledge in the field of human factors is needed to use them effectively. In order to give library staff the possibility to conduct evaluations by themselves, the SII developed a criteria catalogue which is specifically tailored to evaluations of online library services. Its development was based on three different sources. First, a literature review was conducted to identify suitable evaluation criteria. Following that, a best-practice analysis of library websites was carried out in order to gain more insight about the current state-of-the-art. Based on these findings an initial version of the criteria catalogue was generated, which was then further refined by the results of a focus group (library staff, web designers, usability experts). The criteria catalogue uses a modular structure, so that it can be applied for comprehensive evaluations of a library's entire online services as well as for evaluations of only selected areas of a website. It is available in form of an interactive web application. For supporting evaluations a project administration tool is available which guides users step by step through the usage of the application.

Keywords: evaluation, heuristics, usability

Introduction
Libraries have always been places that serve the preservation and intermediation of knowledge. In doing so, for a long time the focus was on collecting and indexing printed materials. However, modern libraries can not only be judged based on their physical collections anymore. Due to the growing popularity of the internet, the increasing digitization of knowledge and the development of new technologies (e.g. e-book readers, AJAX, apps) the environment in which libraries operate has changed considerably. In this context libraries are facing a number of challenges.

In particular libraries should take care, that their resources are represented in the places where typical users do their work. Attracted by the simplicity and the immediate availability of content many users have shifted their information discovery to internet platforms such as Google Scholar, PubMed or Amazon (OCLC, 2011a). This is not at least reflected by the usage statistics of different information services. For instance a survey conducted in 2010 by OCLC (2011b) among library users from Australia, Canada, India, Singapore, the UK and the USA found, that the percentage of respondents, who begin their search for information on library websites, tends to zero.

This indicates that solely indexing information resources and even the mere provision of content is not sufficient. Due to new technologies such as AJAX (Asynchronous JavaScript and XML), which allow to develop more sophisticated user interfaces than ever before, nowadays
users have higher expectations regarding the design, the functionalities and the overall quality of websites and web-based services. As Kelly (2011) points out, one of the most essential characteristics of our digitalized world is the fact that copies of every (digital) object can be made at almost no costs. So in fact the value of having or owning such a copy is becoming more and more negligible. Therefore, libraries should also focus on providing services beyond just providing access to their resources. In order to support users in their information discovery, they should try to provide relations between seemingly unrelated pieces of information. Recommendation services such as provided by Amazon are a good starting point for that.

It is not surprising that the IFLA (International Federation of Library Associations and Institutions) emphasizes this issue in their strategic planning for the years 2010-2015. IFLA is encouraging all its members to work together with partners and users to tap the full potential of digital technologies, in order to provide a seamless and open access to cultural assets and information resources (IFLA, 2010).

Since libraries lost their near-monopoly as information providers they once had (Lehman & Nikkel, 2008), it is essential for them to adapt their websites and especially the provided search functionalities to the needs and the workflow of their users. The aim should be to offer the same ease of use, robustness and performance as internet search engines and similar services combined with the quality, trust and relevance traditionally associated with libraries.

Great effort has already been made in this direction. An indication of this is the large number of projects dedicated to the development and provision of so called “next-generation library catalogues” or “discovery tools”. But there is still room for improvements and a lot of libraries still have to take that step.

**User perceived quality of library online services**

From the perspective of users three aspects are essential for the quality of library online services. Tsakonas and Papatheodorou (2006) have summarized them in their interaction triptych model. This model consists of the three levels usability, usefulness and performance.

Usability expresses the quality of interaction between users and a system. According to ISO 9241-11 this term is defined as “the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.”

![Figure 1: Interaction triptych model (Tsakonas & Papatheodorou, 2006)](image)

Usually it is associated with the functionalities and in particular with the user interface of a product and assesses how users interact with it. In doing so, personal impressions such as satisfaction, helpfulness, benefits, frustration and self-efficacy play an important role (Bertot et al., 2006). Regarding the functionalities themselves it is crucial to focus on those which are really needed by the users in order to fulfil their tasks. For that purpose, profound knowledge about the users and their information needs is necessary. Clearly defined priorities about the “who” and "what" provide the base to implement systems that offer an ideal task support (Battleson et al., 2001).

Usefulness is in the field of human-computer-interaction generally considered together with usability as an integral part of a holistic approach. However, regarding online library services it has to be interpreted slightly different. In this context, usefulness refers mainly to the provided content and its relevance for fulfilling the users’ information needs.

Finally, the performance which is located between system and content describes the systems’ efficiency. This aspect strongly depends on the formats, structures and representations of the content (Fuhr et al., 2007).

Aspects concerning the usefulness and performance are not further investigated in this work. Instead the focus of this paper lies on functional aspects and the usability of these components.

When users cannot handle an online service intuitively, they will potentially classify it as useless and avoid using it again. Therefore, usability is a key factor for the success of library online services. And it is crucially important for web applications, where a differentiation to competitors cannot be achieved by the offered content or functionalities.

In addition to pure usability aspects, over the last years also the so called joy-of-use has gained in importance. Nowadays users expect that the usage of a website should not only be efficient but also fun. Therefore, the term user experience has gained more and more attention. Whereas the concept of usability refers exclusively to the actual
usage situation, user experience extends this concept to the anticipation or respectively the assumed use of a product as well as the processing of a usage situation (Geis, 2010). ISO 9241-210 defines user experience as "a person's perceptions and responses that result from the use or anticipated use of a product, system or service".

It is important for libraries to strive for the best possible user experience, when they’re implementing new services or re-design existing ones. Unfortunately, while the objectives are clearly defined, at the moment there are no detailed guidelines for libraries about how to ensure this and make the most out of newly developed services.

Usability evaluation methods in the context of libraries

There are some aspects that make it more challenging to ensure the usability of library websites. First, it has to be considered that library users are very heterogeneous (Battleson et al., 2001). This makes it difficult to adapt the site to the preferences and skills of all users in order to deliver an ideal task support. Also library websites provide access to a vast amount of different databases, all with their own search functions. This results in inconsistencies in the look and feel, so it is understandable that users are attracted to one-box-search-everything types of sites. Another fact is that librarians have a special terminology which often is also used on their websites. However, typical users are not familiar with those expressions. Usability evaluations help to counteract these problems (Lehman & Nikkel, 2008).

For conducting usability evaluations a wide spectrum of methods can be used. Those can mainly be categorized by two criteria: when does the evaluation take place and who is involved in the assessment. In relation to when the evaluation is conducted, a differentiation can be made between formative and summative evaluations. The formative evaluation will already take place during the development process. Such evaluations focus on finding opportunities for optimizing a product. For that purpose in particular qualitative data such as verbal protocols play an important role. In contrast, summative evaluations are used for the analysis of a finished product and aim to assess the overall quality of it (Nielsen, 1993). Here the focus lies on quantitative data (e.g. task processing time, error rate, etc.) According to who is involved in the evaluation of a product, a distinction can be made between user-oriented (empirical) methods and expert-oriented (analytical) methods.

A well-known example for an empirical evaluation method is formative usability testing. As part of such a formative usability test, real users are observed using a prototype or a finished product, while performing realistic tasks in order to achieve a set of defined goals (Dumas & Redish, 1999). The probably best known analytical method is the so called heuristic evaluation. Heuristic evaluation investigates the conformity of interface elements to established usability principles (Nielsen, 1994). Based on these guidelines one or more reviewer examine a user interface for potential usability problems. As it is easy for a reviewer to overlook a problem, the best results are achieved when several evaluators inspect a product independently and consolidate their results afterwards (George, 2008).

Other popular evaluation methods are focus groups, card sorting, cognitive walkthrough or the use of standardized questionnaires, such as the User Experience Questionnaire (UEQ), AttrakDiff or IsoMetrics. All those methods have been applied for the evaluation of online library resources. Since specific knowledge and experience are of great importance for the goal-oriented planning and accomplishment of such studies, they are often carried out by specialized consultants. This is especially true for smaller libraries which do not have the necessary know-how by themselves. However some larger libraries have their own specialized working groups which care about consulting and evaluating the library’s web resources and services. Examples are the Library’s Usability Group at the University of Michigan, the User Experience Program at the University of Washington or the Indiana University Libraries Working Group. These provide useful information and evaluation reports on their websites, so that also other libraries can benefit from their experiences. Apart from that also many papers about usability evaluations of library resources can be found. A good overview of usability evaluations of library websites is provided by Kupersmith (2012). He summarizes the key findings of 51 usability studies with a focus on best practices for reducing cognitive barriers which are caused by terminology. Fagan (2010) provides a literature review about usability studies of faceted browsing, which is a common feature of modern online catalogues.

According to the list of usability studies from Kupersmith (2012) the method which is used most often are usability tests or respectively user observations. This is not surprising, since such tests investigate the behaviour of real users, whereas by using analytical methods only assumptions about the user behaviour can be made. But since formative usability tests are time consuming and therefore expensive, heuristics are a cheaper alternative to identify usability issues of a product. Heuristic evaluations are especially useful in early stages of development. They allow to identify and to correct common problems prior to usability tests with users (Kirkwood, 2008). For instance the results of heuristic evaluations allow identifying problems with consistency issues and the visibility of links. Also the need for help documentation may be uncovered.

Therefore, heuristics are a widely used instrument for the evaluation of websites in general and also in the context of library websites. For instance Manzari and Trinidad-Christensen (2006) present a study in which a combination
of heuristic evaluation and formative usability testing was used for an iterative redesign of the library website at the C.W. Post campus of Long Island University. Aitta et al. (2008) used the classical list of heuristics from Nielsen (1994) to assess 15 public library websites. Yusihana and Rani (2007) applied the same heuristics to evaluate the usability of a web-based OPAC from an academic library.

**Heuristics for the evaluation of online library services**

Although some authors (e.g. Warren, 2001) criticize, that using heuristic evaluation results in focusing on local issues and micro features rather than the big picture, this method is useful in identifying usability issues (Blandford et al., 2004). However, commonly used heuristics, like the ones from Nielsen (1994) are rather generic and even more specific ones, which were developed especially for websites (e.g. “Guidelines for Designing Web Navigation” by Farkas & Farkas, 2000) cannot be used effectively without extensive knowledge in the field of user interface design (Blandford et al., 2004). Thus libraries could benefit from heuristics, which are particularly tailored to their needs. Of course such evaluation criteria cannot replace the experience of specialized consultants or tests with real users. But nevertheless they can help to avoid common pitfalls and provide information about which aspects should be considered in the implementation or the redesign of library online services - even to persons without an in-depth experience in the field of human factors.

In order to give library staff the possibility to conduct evaluations by themselves the Swiss Institute for Information Research (SII) developed such a specified criteria catalogue (BibEval). It can be used in form of an interactive web application which is going to be described in the following sections.

**Development of the criteria catalogue**

The development of BibEval was based on three different sources. First, a literature review about usability evaluations of library online services was conducted. The aim was to identify suitable evaluation criteria. Additionally, a best-practice analysis of library websites was carried out, in order to gain more insight about the current state-of-the-art. Based on these findings, an initial version of the criteria catalogue was generated. This draft was then analysed and further refined by the results of a focus group with experts from the fields of library, web design and usability engineering. This resulted in a modular useable, hierarchical structured list of evaluation criteria. In this context modular means, that with regard to the functionalities of a website, a differentiation was made between which components or functionalities are indispensable for users and which are rather “nice to have” (classified as “must” and “optional”). This modularization aims at maximizing the applicability of the criteria for libraries of different size and type. Whereas small institutions with little resources for evaluating their websites get the chance to focus on the most relevant features, larger institutions can use the criteria list for performing more comprehensive and detailed analysis of their services.

**Web application**

As already stated above our criteria catalogue (http://www.cheval-lab.ch/en/usability-of-library-online-services/criteria-catalogue-bibeval/) is available in form of an interactive web application. The application was implemented as a typo3 extension based on MySQL, PHP and JavaScript/AJAX and is available both in English and German. Institutions can use it free of charge, in order to create customized lists of questions for their usability evaluations. There are two variants to use the application. The first option is to use the tool without registration/user account. In this case individually arranged criteria catalogues cannot be stored in the web application. Also no preliminary results of evaluations can be stored in the application. Therefore, this variant is preferably only used for small evaluations with just one expert and a short list of evaluation criteria. For larger projects it is recommended to create a user account. In this case a project administration is available which supports the accomplishment of evaluations with several experts as well as the storage of preliminary results.
Figure 2: Overview and structure of the web application
**Basic design and use**

The criteria catalogue as well as the corresponding web application can be divided into three areas. At first (“selection of sectors”) users have to define which parts of a library website they want to evaluate:

“Information & Communication” covers all aspects of information dissemination and user support (e.g. contact form, site map, etc.).

“Search & Explore the collection(s)” includes all functionalities related to searching, browsing and accessing the library’s collection(s).

“Personalization & Customization” contains all features that allow users to adjust the settings of the online service to their individual preferences.

“User participation” encompasses all functions that enable users to participate in the processes of creating, exchanging and sharing information.

Apart from that individual selection of sectors also some pre-configured versions of the criteria catalogue are available. They can be accessed via a drop-down menu at the top of the application (see figure 2).

In a second step (“selection of components”) users can refine the scope of their evaluation. For that, according to their selection of sectors such as “Information & Communication” a list with components/functionalities is provided. By marking checkboxes users can decide which of those they want to consider in their evaluation. For this selection also two radio buttons are available above the list of components/functionalities. Those can be used to define whether all components should be included in the users’ individual criteria catalogue or only those which were classified as mandatory based on our best-practice analysis.

In the third area (“criteria catalogue”), users find their individual list of evaluation criteria and have again the possibility for further refinements. By using the option “Show also general questions for the sectors” some more general criteria related to the four top level sectors (e.g. “Information & Communication”) will be added to the list of evaluation criteria. If the corresponding checkbox is not marked, only the criteria for the components/functionalities themselves will be taken into account. There is also an option for conducting just a rather basic evaluation of a web-site. For that purpose users can simply deselect the checkbox “Show questions for the components”. By doing so the detailed evaluation criteria for the individual functions of a website are removed from the criteria catalogue. Finally, there is also an option for refining the list of evaluation criteria for the individual components/functionalities. analogue to our classification of components into “mandatory” and “optional” we did the same for the criteria themselves. The reason for that is that there are requirements which have to be met in any case and others which don't have such a big impact on the user experience.

After customizing, the criteria catalogue can be used for the evaluation of the chosen service. For each criterion there is a drop-down list to make an assessment. For this we have oriented ourselves on the severity rating according to Nielsen and just slightly adapted the scale (see table 1). If users want to enter additional information they can click on the button “Add comment”. By doing so an input field appears which can be used for comments on a particular criterion.

Regarding the use of our tool, for sure conducting the rating is the most difficult part. But users should keep in mind that the objective of the severity rating is not primarily an exact classification. It is more about defining priorities for the elimination of identified shortcomings. Altogether it does not matter much whether a problem has been classified, e.g. as a “moderate usability problem” or as a “severe usability problem”. Since every problem user encounter in dealing with a website reduces its perceived quality, all shortcomings should be eliminated anyway. In order to obtain reliable severity ratings, it helps to conduct an evaluation using several experts.

At the end of an evaluation, users have the option to generate an evaluation report. This report includes the customized criteria catalogue, the results of the severity rating as well as any comments made during the evaluation. Reports are available in two export formats: as a PDF document or as a CSV file. The latter can be processed further, e.g. by using MS Excel. CSV export has the advantage that the file is editable, e.g. amendments can be made later on if necessary. By using this option users have the possibility to create an individual evaluation guide and to export it directly without making any ratings. Based on the CSV file, they can perform the evaluation “offline” afterwards.
Table 1: Severity rating (adapted from Nielsen, 1994)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>not applicable</td>
<td>A question or a specific evaluation criterion does not apply to the analysed website (however, there is no problem and no mandatory component is missing).</td>
</tr>
<tr>
<td>no usability problem</td>
<td>Everything works and is easy to use.</td>
</tr>
<tr>
<td>minor usability problem</td>
<td>“Cosmetic problem” – something is unsightly and not implemented well but this shortcoming does not impair the service.</td>
</tr>
<tr>
<td>moderate usability problem</td>
<td>The identified shortcoming may result in operational errors, but does not necessarily prevent users from achieving their objectives.</td>
</tr>
<tr>
<td>severe usability problem</td>
<td>The shortcoming prevents users from completing their tasks or from achieving their objectives.</td>
</tr>
<tr>
<td>not implemented though required</td>
<td>A feature or component that would be helpful and which therefore was classified as mandatory is missing.</td>
</tr>
</tbody>
</table>

**Project administration**

Since the end of 2012 an additional project administration is available, which makes working with BibEval more comfortable. It is designed to lead users step by step through the process of an evaluation with our tool. To be able to use the project administration a registration or respectively a user account is necessary. The main advantage of using the project administration, rather than to use our tool without a registration is that it allows to save preliminary results during an evaluation and to re-use previously created criteria catalogues for subsequent evaluation projects.

After the login the project administration can be accessed on our website via the corresponding menu item. There, users have the opportunity to start own evaluation projects as well as to access evaluations to which they have been invited as an expert/evaluator. For the creation of a project initially only a title and a URL must be provided. After that an overview page for the created project will be shown. On the one hand, on that page all steps, which have to be performed with the tool, are listed. On the other hand, this page also provides an overview of the current project status by visualizing which activities have already been carried out and which steps are still open. At the bottom of the page there is a possibility to define further project assistants. This is an optional step. In this context it is important to state that the project administration is based on a role concept, in which the three roles project manager, project assistant and evaluator can be distinguished. The project manager and the project assistants are responsible for the administration of the evaluation but do not necessarily take part in the study itself. The assessment is made by the evaluators, which can be defined by the corresponding tab. If also the project manager and project assistants shall take part in the assessment, they have to be invited to the study explicitly.

The navigation within the application is realized in form of tabs, whereat the application consists of five dialogues. After the definition of the basic project data and if necessary additional team members in a second step the specific criteria catalogue for the project has to be defined. The procedure for doing that is the same as described previously. However, by using the project administration individual criteria catalogues can be saved and made available online to other evaluators. During the setup of an individual criteria catalogue intermediate results can be saved. When the compilation of the list of criteria is completed, it must be released for evaluation. Without releasing no evaluators can be invited to the study. After the release adjustments on the criteria catalogue are still possible - but only for so long as no evaluators have started their assessment.

For the invitation of evaluators e-mails are used. For that purpose there are already pre-configured text blocks stored in the system. On the one hand, there is a signature field. This data is inserted automatically at the end of each of the sent emails. On the other hand, three different types of e-mails are supported by the system. One type is used for the invitation of the evaluators. The second types are reminder e-mails. They can be used to send a message to those experts, who have not yet completed the questionnaire before the end of the defined evaluation period. Last but not least the third type of e-mail is used to thank the evaluators for participating in the study. This mail will be send automatically as soon as an evaluator has completed the evaluation. As already mentioned, for these messages there are default texts in the system, which can be adapted to the individual needs. When doing so, one should keep in mind that in the default texts at some passages variables are used (indicated by brackets). Examples are the evaluators’ names or the URL of the website which is going to be analysed. These fields should preferably not be deleted or overwritten.
**Evaluation progress and status:**

The following phases and steps of the evaluation need to be completed:

<table>
<thead>
<tr>
<th>Phase 1: Test preparation</th>
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</thead>
<tbody>
<tr>
<td>Define basic data</td>
</tr>
<tr>
<td>Define assistants</td>
</tr>
<tr>
<td>Customize the criteria catalogue</td>
</tr>
<tr>
<td>Customize email</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase 2: Start the evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define the evaluation period</td>
</tr>
<tr>
<td>Invite evaluators</td>
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<tr>
<td>Conduct the evaluation</td>
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</tbody>
</table>

<table>
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<tr>
<th>Phase 3: Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generate report(s)</td>
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</tbody>
</table>

**Basic data:**

Project manager: Weinhold Thomas  
Name: LIDA2014  
URL: http://ozk.unizd.hr/lida/

**Add additional project assistants:**

Assistants can customize the criteria catalogue, the emails to evaluators as well as invite evaluators.

<table>
<thead>
<tr>
<th>Surname</th>
<th>First name</th>
<th>Email</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surname</td>
<td>First name</td>
<td>Email</td>
<td>invite!</td>
</tr>
<tr>
<td>Surname</td>
<td>First name</td>
<td>Email</td>
<td>invite!</td>
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<tr>
<td>Surname</td>
<td>First name</td>
<td>Email</td>
<td>invite!</td>
</tr>
</tbody>
</table>

Figure 3: Project administration
Subsequently, in the tab "evaluators" the period in which the evaluators have access to the individual criteria catalogue has to be defined. This can be done either directly by entering a start and an end date in the appropriate field or by using the provided date picker. Below the evaluators can be invited for the study. For that purpose, only the name of an evaluator and an e-mail address must be provided. By clicking on the button “Invite evaluators” the previously described invitation e-mail will be sent. It contains a special token, to ensure that only invited persons get access to the project. These tokens are also valid only once, so that they cannot be passed to third parties.

The last tab is used for the analysis of the evaluation results. There tables are provided which give an overview of who has already fully or partially finished the evaluation and who has not started yet. On this page also evaluation reports can be generated. As within the basic version PDF and CSV are available as output formats. In addition, an HTML-view of the results can be used. This is particularly suitable to get a quick overview of preliminary results. It has to be mentioned that the reports generated within the project administration include an additional part, which is not integrated in the reports of the basic version. The reports of the basic version are only connected to one evaluator, whereas the reports generated with the project administration usually summarize the results of multiple evaluators. In order to be able to provide an overview of the expert group of a project, the invited experts have to fill out a short pre-test questionnaire before they get access to the criteria catalogue and can start their evaluation. In the pre-test questionnaire some demographic information is requested. These data are summarized at the beginning of a report in form of tables and simple diagrams.

**Conclusion**

With regard to the literature about heuristic evaluations of library online services, it can be noticed, that the majority of studies is limited to the application of Nielsen’s ten heuristics. Nevertheless there are some studies which tried to develop library specific heuristics. For instance, Clyde (1996) has proposed a list with ten recommendations for the design of library websites. Clausen (1999) also developed criteria for the evaluation of library websites. Based on a best-practice analysis Raward (2001) has created a checklist of design principles for library websites consisting of 100 items. Aitta et al. (2008) have used Nielsen’s heuristics to create a version of these guidelines which is tailored to libraries. Kirkwood (2008) also presents two examples of library-specific heuristics. The Web Usability Team at the University of Virginia adapted Nielsen’s heuristics. Their list of heuristics is divided into three categories (“Information Structure and Navigation”, “Content and Design”, “Specific to Search Forms and Data Manipulation”). The Web Site Support Team of the Purdue University developed a more detailed list consisting of seven categories (“Clarity of Communication”, “Accessibility”, “Consistency”, “Navigation”, “Flexibility and Minimalist Design”, “Visual Presentation”, “Recognition Rather than Recall”).

However, most of those heuristics are kept rather generic. They can be regarded as flexible guidelines and not as specific rules (Kirkwood, 2008). Therefore, for using them a certain level of experience in human factors is necessary, as it is the case with the general heuristics of Nielsen. With the library specific catalogue of evaluation criteria the SII wanted to provide something more comprehensive, which can also be used by library staff without that specific knowledge. Since the criteria catalogue includes a wide spectrum of contemporary functionalities and features used in modern library websites or other online services, also developers can use it as a guideline.

The related web application is a flexible usable tool, which supports evaluations with different levels of detail. One advantage of the chosen approach is the separation of the actual evaluation criteria, which are stored in a database, from the application logic. Thus, the list of evaluation criteria can be further refined and updated at any time. Here, we hope to get support from the community. Since our criteria catalogue is available under a creative commons license, it would be great if other institutions would share their experience in order to help to improve it further.

**REFERENCES**


**Curriculum Vitae**

Thomas Weinhold is a research associate at the Swiss Institute for Information Research. He holds a diploma in information management from Stuttgart Media University and a master degree in business information systems from the university of Konstanz. His research focus is on human-computer-interaction and information retrieval systems.

Prof. Dr. Bernard Bekavac holds a PhD from the university of Fribourg. He is the director of bachelor studies in information science at the HTW Chur and leads the research area “information engineering” at the Swiss Institute for Information Research. His research focus is on information and web retrieval as well as usability of library web sites.

Sonja Hamann is UX Consultant at Namics AG. She holds master degrees from the university of Regensburg (information science) and the university of Konstanz (information engineering) and does her doctorate at the university of Regensburg. Her research focus is on user centered evaluation of recommender systems.