MEETING THE USERS’ NEEDS IN THE ACCESS TO INFORMATION: EFFECTIVE COLLABORATION FOR DEVELOPING AND DELIVERING NEW USER-CENTERED INFORMATION SERVICES

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Abstract

University library needs to learn how to work with new models of scholarly communication and react on new challenges in the global knowledge environment within and outside the university community. This paper introduces electronic tools and services based upon a close cooperation and intensive feedback from the researchers and teachers, which have been introduced by the library for the enhancement of the electronic information resources use and for building a digital space for communicating information.

Based on the idea of alerting services and using simple and generally easy-to-setup RSS technology, the Central Library of the Czech Technical University in Prague has introduced targeted services for specific user groups to provide continuous flow of new information from various scholarly resources. Outputs might be used for various purposes – course literature, literature for individual departments, researchers, research teams, etc. For the success of the services, close cooperation with the users as well as integration within the university infrastructure is essential.

Keywords

Information behavior, scholarly communication, alerting services, RSS feeds

1. Introduction: User needs in the academic technical library

Saving time, high quality and familiarity are the common denominator for scholarly communication and information seeking related activities of scientists and engineers. Numerous
studies on information behavior of scientists and engineers reveal that while seeking for information and using communication channels, the following factors are the most important: “relevance, technical quality, comprehensiveness of data and information, ease of obtaining, and ease of reading and using” (Case, 2008, p. 256). Relevance appears in multiple studies to be the most important factor while deciding which information resource to use (Case, 2008, p. 256, Tenopir, 2004, p. 168).

Other important factors while seeking for information is the distance in which the information can be reached. Studies have confirmed that informal and the closest information source is to be used first, however it must be of a high quality. Usually own knowledge and collection of documents, oral information from colleagues (in the department, laboratory, research team, etc.), and familiar and well-known information sources are preferred. When the information is not found through these channels, further formal resources are used – with library services at the end. (Case, 2008, Tenopir, 2004).

2. Library’s position in the university infrastructure

Carol Tenopir (2004, p. 175) describes a case study of a large research institution library that had a great knowledge of information needs of their user community, however failed to actively disseminate information among them. Part of the problem was missing personal contacts between the library and the institution and the institution’s failure to involve the library in the research process. And this is a situation, we at the Czech Technical University in Prague (CTU; http://www.cvut.cz wish to avoid.

The CTU is one of the oldest technical universities in Central Europe and a large and prestigious university within the Czech Republic (CZ). It is home to about 21 thousand undergraduate and graduate students, about 4,5 thousand academic and R&D faculty members, and PhD students. The CTU consists of 8 faculties (schools), 3 higher education institutes, and 5 other constituent parts. The Central Library (CL; http://knihovna.cvut.cz) was founded as an independent unit within the university structure in 2009 by merging former individual faculty and departmental libraries. However young institution the library is, it has already gained a strong position within the university infrastructure.

The knowledge of the university environment, its internal structure, principles, and strategy are crucial for good functioning of the university library. Key aspect in order to provide appropriate and valuable services is having compact, enclosed and easily defined user group, having knowledge about their research and educational areas, and having close personal relationship with them. Upon personal relationships we gain detailed information about the information behavior and needs of our users. However, we should not rely only on their requirements; above all it is necessary to foresee their unexpressed and unrealized information needs and have those in mind when thinking of new ways of disseminating information.

3. Key issues of communicating information

In terms of communication and delivering information to the end users, emphasis is put onto delivering information targeted at particular user group, and on bringing the important information as close to the end user as possible. The communication strategies have to fulfill requirements on providing high-quality and easy-to-access information. So the form, content, and channel of the “message” are prioritized over colorful design and overwhelming marketing tools.

Judith Palmer (1991; cited by Case, 2008, and Bawden and Robinson, 2011) recognizes five groups of information seeking behavior:

1. “Nonseekers” (those who do none or little information seeking)
2. “Long, wide rangers” (those who read wide range of texts and tend to work alone)
3. “Unsettled, self-conscious seekers” (those who often tend to change their search topics)
4. “Confident collectors” (those who collect large number of literature)
5. “Hunters” (those who pay close attention to new findings and often seek information)

With this study in mind, focus on users 1-3 is essential. To reach them it is necessary to identify and involve “opinion leaders” who influence significantly a large community of colleagues.
Those people act as information providers for the community. Those might be key faculty members, active users, librarians, and staff or faculty members responsible for library-related activities at individual departments. Crucial is that they have the possibility to spread ideas among significant number of faculty members and students. Those information providers are “recruited” upon long-term cooperation, personal relationships, and common trust and respect of each other. Since it is spread through individual persons, the information shall be carefully formulated and targeted to the particular user community. Therefore an individual approach is essential.

3.1. Communication channels

Communication strategy is a key point in effective promotion of library information services. Z. Rouskova (2013) has analyzed communication and marketing strategies of database vendors and information suppliers towards further information providers and end users. The library, as information provider, identifies itself with these communication strategies (Fig. 1) and focuses on key communication means in each channel.

![Library communication strategies](image)

Fig.1 – Library communication strategies (based on figure by Rouskova, 2013, p. 59).

The library website is the most important channel; although it is rather static and it is not enough. Just alike the studies have shown, we have experienced that the closer the information to the end users is delivered, the more users are attracted. Therefore we wish to bring important information closer to them by publishing selected information on faculty websites, in cooperation with its administrators. As far as we have experienced, faculty websites are the most useful channel to reach out to wide groups of students.

Websites are rather less dynamic channels. We further focus on individual communication via targeted e-mails and besides this, we have established an e-mail conference for students, Ph.D. students and researchers aimed at sending out news regarding scholarly information resources, seminars, lectures etc.

In terms of social media, we communicate with users via Facebook ([https://www.facebook.com/knihovnacvut](https://www.facebook.com/knihovnacvut)). According to information provided by Socialbakers.com ([http://www.socialbakers.com/facebook-statistics/czech-republic](http://www.socialbakers.com/facebook-statistics/czech-republic)) and Klaboseni.cz ([http://www.klaboseni.cz](http://www.klaboseni.cz)), servers which monitor social media traffic, Facebook is in the CZ by far the most used social network, much more popular than Twitter. As of February 2013, Twitter has about 3.5% of Facebook users in the CZ. Facebook is used to publish all
kinds of information - from promoting library and CTU events, information resources, IT and technical sciences related news and interesting information, all the way up to jokes to enlighten the day. By the combination of jokes and scholarly messages we keep the Facebook profile popular. By Facebook we intend to reach above all younger and prospective scientists who might miss other communication channels, or prefer these channels to e.g. websites.

Posters, leaflets, and handouts are secondary marketing tools, complementary to information that is primarily published electronically. We use them, but we do not put too much emphasis on their impact.

Seminars and trainings targeted to specific user groups (i.e. students, Ph.D. students, teachers, researchers, departmental librarians, etc.) are considered to be important communication channels as well. After attending a seminar, users often come back to attend further events, or they contact the library with individual tasks. With the intention to fit the seminars to the information needs of the attendees, they are encouraged to send questions or topic proposals ahead of time. By this, attendees receive information to their concerns, and librarians find out more about their needs and requirements.

Virtual reference services are provided by two means. At first by e-mail through one general e-mail account which is administered by more colleagues, and thus is continuously monitored. Second, the library has joined university helpdesk system where, upon registration, students and faculty members post comments, questions, or complaints, and watch how the task is being processed.

And last, much information is communicated personally, during consultations either in person, or by phone.

3.2. Further feedback tools

In order to set the services and tools, user information and feedback analysis is necessary. Lot of it is gained through the communication channels described above. Further feedback is gathered from Google Analytics tool, which analyzes user behavior while searching our websites. In most cases, a correlation appears between site traffic and the use of the service.

We have adopted two main approaches:

1. Highly visited sites are findable, services are used.
2. Poorly visited sites are either less interesting or not findable and changes must be done. In this case further information is gathered through other communication channels.

As an example, information and guidelines regarding online information retrieval are among highly visited sites. This showed us the importance of online resources, scholarly information, and online retrieval services for students and researchers and inspired us to implement further services in this area.

There are surely many gaps and further challenges in the communication strategies towards the users, however by mixing multiple channels we wish to reach out to as wide part of the user community as possible.

4. Services

Based on the gained information, on knowledge of the university environment and on knowing the user needs, we have developed few really simple, although effective services. We use and integrate existing data, systems and information for nontraditional purposes to provide users with easier access to information. The idea is simple: to make as much as possible out of what is available. To set the services, we profit from the capability of our technical academic community, and from the cooperation with other university parts, above all with the CTU’s Information and Computing Center.

4.1. Recommended Literature Online
The application called “Recommended Literature Online” ([http://biblio.civ.cvut.cz](http://biblio.civ.cvut.cz)), is an integrated service aimed at providing targeted information for educational activities. It generates lists of course literature for courses taught at the CTU. The idea grew up in the library; and the application has been set up upon cooperation with the lecturers and on interconnection with the study information system, a part of the university information system. Its output is an interactive application with a list of course literature, recommended titles, and a list of newly published titles in the scholarly databases for particular courses with the possibility of rating, commenting, evaluating, sharing, and organizing these records.

Recommended Literature Online is primarily a platform for lecturers providing effective work with course literature and a communication channel between lecturers and students in the area of information resources. Since the application is available 24/7, it is an effective way of communicating targeted information. Students access key course literature as marked by their lecturers (i.e. key titles for the class, exam, semester paper etc.), they watch new records and key titles for their topic. It influences their work with scholarly literature, citations, and electronic information resources and thus supports their information literacy. Both, lecturers and students gain overview of recently published information in the particular field.

4.1.1. Application description

The application gathers data from selected electronic information resources. As a priority, we made sure that the way data is used meets license agreements, and publishers were asked for approvals. The main page is freely available to anyone (as declared by the lecturers themselves), detailed information are available only after sign in.

The course interface contains brief course description, subtopics (each subtopic has its own title list and acts as an independent topic), and list of selected titles. There are two types of records: static titles approved by the lecturer, and dynamic titles continuously imported via RSS feeds from various scholarly databases. This dynamic title list is placed below the static list, users chose to view or hide it, and lecturers might add any of these titles to the static list. Title lists might be organized and grouped in various ways upon the needs of the lecturer. Any document type might be displayed in the list - journal articles, conference papers, book chapters, books (incl. e-books), presentations, etc.
Upon sign in, a detailed record is accessed which displays further ratings, comments, and link to the record in the database where it had originally been retrieved, possibly containing full text. Signed-in users have rights to add ratings and/or comments. The authorization system is connected to the university user management system, and so all CTU users can sign in using their main CTU credentials without additional registration.

4.1.2. Application setup

This application requires two levels of the library and the university integration. First, to establish a new course record, basic course data (title, abstract, lecturer names etc.) are imported from the university study information system. Second, content (title list) must be created. This is a task for library online retrieval specialists in cooperation with lecturers, and is done by multiple means and in two steps:

4.1.2.1. Static title list

An initial title list proposal is prepared by the library online retrieval specialist upon the field area specification by the lecturer. The search is done in electronic information resources, in library catalogue, in other available scholarly resources, and also in commercial publisher databases or e-shops (e.g. Amazon). Search results are then evaluated together with the lecturer and final query is formulated. As result of the online retrieval process, core titles are selected and imported to the application. There are three ways of adding selected titles to the list:

1. Manually via simple form in the application.
2. Records form the CTU library catalogue via an integrated search engine in the application.
3. Via RSS feeds from the electronic information resources, based on the online retrieval results (enabled for static as well as dynamic title lists).

4.1.2.2. Dynamic title list

Apart from the initial static title list, additional dynamic tool is implemented to continuously bring new titles to the course based on simple RSS feeds from various scholarly databases. Resources that are the most widely used and that fit the best to the particular study area have been chosen (EBSCOhost, ScienceDirect, SpringerLink, IEEEExplore, Web of Science, Scopus, COS Research Support Suite). Further resources were not used because of problems with setting up RSS feeds. Crucial issue of this service is the online retrieval process, i.e. composing and refining the research query which is the basis for the RSS feeds. Refining the query requires highly skilled online retrieval specialists, and should be performed patiently, carefully, and in close cooperation with the lecturer. This is the added value and the know-how that the library provides its user community and that makes the service special.

4.1.2.3. User roles

From the system perspective, there are three different user roles: Librarian, Lecturer, and Student.

**Librarians** are the main administrators, they create initial empty course records based on the data from the university information system and set up user roles. As described, they execute online retrieval process based on the lecturer’s requirements, and input RSS feeds into the application. Librarians help with further setting of the course record.

**Lecturers** have administrator’s rights to edit title lists, input records manually, set up subtopics, and confirm initial titles proposed by librarians. They also add ratings and comments. Lecturers have full control over all their courses. They formulate their information requirements and help to refine queries.

**Students** as end users have free access to all course lists and functions as briefly described above. After sign up they can evaluate the titles by rating or placing comments, they access the original record and possibly also full text in the source database and they can maintain list of their favorite classes within their account. They can also subscribe to the RSS feeds of the particular class or subtopic themselves.
4.1.3. Current state and summary

Initially, literature lists have been kept by individual lecturers on their websites and no tool has been offered throughout the university for this purpose. This application has been developed in 2012 and has currently been tested with pilot lecturers and selected courses at two CTU faculties. The first feedback is positive so far. The lecturers like the tool, especially to organize course literature and highlight important titles for students without the need for searching in multiple databases themselves and without having to take care of the application. They are further surprised by all that the library does, and cooperate to suggest new functions for this application themselves. However, it is important to mention, that testing is done in cooperation with the “opinion leaders”, faculty members who are progressive, and have positive attitude towards new tools and services.

4.2. Providing information support for R&D

Just like providing information support for educational purposes, we wish to deliver targeted information services also for researchers, research teams and departments.

Similar to the “Recommended Literature Online” application, a list of new literature for individual research areas has been developed on the CTU library website (http://knihovna.cvut.cz/informacni-zdroje/novinky-podle-oboru/). The aim of the service is to bring new channel for providing up-to-date targeted information on newly published titles in scholarly databases and promote electronic information resources suitable for individual research fields. This service is based also on targeted RSS feeds from the same electronic resources. Upon cooperation with departmental leaders, project leaders, and researchers, the library online retrieval specialists select relevant information resources for individual research areas, compose and refine queries, and set RSS feeds. An individual set of core information resources for each research area is selected.
Initial phase of this project is focused on addressing opinion leaders and setting the service for selected departments/research areas. Within this phase, experience shall be gained in formulating queries for RSS feeds and in recognizing unexpressed user needs. This proactive service is addressed at all users – “Nonseekers” to “Hunters”, whereas each user might benefit a different way. Nonseekers and young researchers get acquainted with relevant resources available for their topic, Hunters and possibly also opinion leaders, and experienced researchers might be delivered the desired information without searching themselves and might help to improve the service by their feedback as well.

4.3. Providing publication support for R&D

RSS technology is also used for automatic generating of lists of new records of CTU authors in WoS and Scopus citation databases (http://knihovna.cvut.cz/veda/nove-zaznamy-cvut-ve-wos-a-scopus/). The process is analogous to the previous services and is available to CTU users after sign in using CTU credentials.
The reason why we put emphasis on the WoS and Scopus records is these resources’ importance within the Czech national R&D assessment process. Articles published in resources that are excerpted by WoS and Scopus are highly valued, both, professionally and financially. For their high value, records listed in these citation databases are carefully observed by the authors. Watching these resources and providing information support for R&D and scholarly publishing at world esteemed publishers is another task that the CTU library performs. Watching publication output in citation databases is further valuable for international university rankings, since esteemed rankings (e.g. QS University Ranking: http://www.topuniversities.com/) use these data to evaluate university research excellency.

Because of the importance of being visible and cited in the international research environment, free access to individual researchers’ outputs is nowadays a standard. The CTU follows this trend by providing Institutional Repository and interconnecting it to the university information infrastructure. Further Open Access-related activities are supported as well, including e.g. Open Access journal publishing and developing infrastructure for journal editors at the university (Open Journal System).

5. Summary and challenges

Many challenges have come up and others yet surely will while finalizing these services. The main problem from the library perspective is the functionality of the electronic information resources. Setting up RSS feeds is a different procedure in each resource. Some provide it freely, others require creating user account, and for some databases it is necessary to refresh the query after a certain time period. As mentioned above, not all resources enable RSS feeds, and some resources might have temporary or permanent problems with them. In general, RSS feeds have different setup in each database and so various feeds behave differently in our application as well. The update frequency differs (some RSS feeds are updated with every new
record, others are updated regularly in a particular time period), update performance is different in each resource (after an update, some RSS feeds delete the previous batch, whereas some keep this and extend the list), and the final order of records in the list varies.

Records from electronic resources that do not enable RSS feeds might be imported via RefWorks, a tool for organizing individuals’ literature lists. Selected records are imported into RefWorks and RSS feeds are set there. Drawback is that the import into RefWorks must be set for each record individually, so this process might not be useful for regular automated import of larger batches.

Second important task is formulating the query. Challenges have been experienced with retrieval interfaces and retrieval engines. With the trend of implementing Google-like search interfaces, some databases do not allow creating structured and advanced enough queries that are necessary to fulfill the lecturers’ needs. Often advanced search interfaces do not enable to use more than a certain number of keywords, or all Boolean operators when connecting more research fields in a more structured query. Some resources further fail to allow specifying own time range for the query. Setting query for RSS feeds is in some means different process to single online information retrieval. Important is that the query should be valid for a long time period and should return a reasonable number of results frequently. Its breadth and depth is essential. Too broad queries bring too many and less relevant results; too narrow queries bring too few results less frequently for the title list to be updated as often as desired.

6. Conclusions

CTU Central Library services and activities stem from the traditional concept of library information services and the university library’s mission. They reflect new technologies, models of scholarly communication, and react on new challenges in the global knowledge environment. Our effort is to become supportive members of research teams and to serve to facilitate the research and educational process.

However the technology might not seem perfect, RSS feeds have shown their usefulness and effectiveness for delivering wide range of alerting services from multiple resources and for various user groups, for educational and research purposes. Its overall simple setup is a great advantage.

While setting up these services, library has strengthened its cooperation with lecturers and gained experience in determining their information needs, communication patterns, and habits in their use of information resources, in terms of finding the way how the library can enhance their university life.

References


