ZÍSKEJ – national system for sharing and delivering documents

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Abstract:

A software platform called "ZÍSKEJ" (Get it) for documents sharing and delivery was designed and developed at the National Library of Technology as a nationwide system for public libraries in the Czech Republic. The project was supported by the Ministry of Culture of the Czech Republic. The system ZÍSKEJ is published as open source with a GNU Public License (GPL).

ZÍSKEJ is a server application that is capable of managing user's document requests through its web client or local integration using the available API. The system is based on a request management module that automatically handles the queue of incoming requests to deliver the document requested by end users or by libraries that serve end-users.

Keywords: document sharing and delivery, information system, nationwide library network.

Introduction: Libraries and the sharing economy

The sharing economy is based on renting, exchanging, or sharing property within the community. It takes advantage of the fact that the owner often does not use the owned object continuously, so he can offer it to other interested parties. Thanks to information technology systems, community-based sharing economies can reliably realize real-time sharing of flats, cars, offices, etc. In this way, communities or clubs are set up to acquire items of interest for members, and members can then share these resources in a controlled manner. Libraries and their users work on the same principle as these clubs.

Libraries have been using a sharing model for centuries. In the beginning they shared manuscripts and printed documents, in recent decades also electronic collections (e-journals and e-books) and non-traditional items (umbrellas, games, tablets, didactic tools, etc.). Libraries are also pioneers in sharing study rooms and even in sharing referral and consultation specialists.[1]

Library collections sharing to support science and research

The mission of academic and research libraries is to provide the necessary information support for students, teachers, and scientists at universities and scientific institutions. Science and research would flounder and fail without information resources and associated research services. However, acquisition and maintenance of the information portfolio is very costly and many research and education institutions cannot afford to buy all documents and databases required in a "just in case" inventory strategy (JIC).[4] Increasing pressure on economic efficiency of resource management calls for using flexible models of "just in time" acquisition (JIT), i.e., acquisition of information resources in real time driven by real users' needs. Today's users also expect library services to be available anytime, anywhere, as they are used in common web delivery and purchasing services. The form of modern acquisition and access to library content has changed significantly in recent years.

The most frequently used JIT acquisition models are PDA, ILL, and EDD:

> - Patron-driven Acquisition (PDA) is a collection development model in which a library purchases a document only when it is required by a user,

> - ILL (InterLibrary Loan) is a service allowing a library user to borrow books or documents owned by another library,

> - EDD (Electronic Document Delivery) is a type of ILL where a user obtains the requested document from another library in electronic form, obtained either as an e-copy or by scanning a printed document.

Document sharing and copyright laws

There is a conflict of interest between publishers and libraries, and it is frequently discussed.[3] Some publishers see libraries as competitors that threaten their sales due to document sharing practices like interlibrary loan. It should be noted here that this problem arises only with documents that are still available on the market. However, libraries collect a number of documents that are out of print and no longer available in the book and journals marketplace. This position of publishers is logical when shared documents or parts thereof are shared for commercial purposes, and copyright law in most countries restricts commercial applications. On the contrary, using library services for individual needs, especially in the fields of education, science, and non-commercial research is in the public interest and is also defined by law in most countries.

For each information resource, it is necessary to respect the copyright law and licensing conditions under which the information resource was acquired. The conflict between publishers and libraries is solved by open access that has been becoming a standard in Europe and other countries. Open Access (OA)[5] is a scientific communication model that provides permanent, instant, free, and online access to the fulltext of published scientific results (mostly articles) without limitation for anyone.

Cooperation of the Czech libraries in their network

Public libraries and academic libraries in the Czech Republic are regulated by Library Act 257 from 2001.[9] This Act defines, among other things, the so-called library network in which all libraries have to cooperate with each other and share their collections within the interlibrary loan service (ILL). Until now, ILL has been based on phone calls and e-mails, which was ineffective, too dependent on personal contacts that are often changing, and lacked any central control of the requests. It was not possible to maintain a common standard for running these services at the national level.

In addition to traditional ILL, where libraries lend to each other's printed documents from their collections, other forms of library delivery services have been introduced. First, making of microfilms that replaced lending of the original printed document. These, along with the arrival of faxes, significantly accelerated library delivery services. But the biggest change in collections sharing has been brought about by expansion of personal computers. The ability to create an electronic copy from a printed original and to provide this copy for downloading or electronic distribution has brought a paradigm shift in library cooperation, increase in delivery speed. Unfortunately, this type of service is limited by copyright and other legislative constraints that complicate development of electronic document delivery (EDD). Nevertheless, the INVIK system[8] was developed and successfully launched at the State Technical Library, Prague in 1997, which made the library collection accessible to hundreds of registered system users in the form of EDD. Since 2001, the system was extended by dozens of other libraries' collections and was renamed to VPK (Virtual Polytechnic Library).[7]

System Získej: a nationwide system for documents sharing and delivery

In 2016 and 2017, a software platform called "Získej" (Get it) for documents sharing and delivery was designed and developed at the National Library of Technology as a nationwide system for public libraries in the Czech Republic. It uses the best practices from its predecessor VPK, but it was completely redesigned. The project was supported by the Ministry of Culture of the Czech Republic. The system Získej is published as an open source with a GNU Public License (GPL)[2]. It is written in Python and uses several expanded python web frameworks, such as Zope, Plone, and Pyramid. It is currently available in Czech and English. It can easily be deployed to support the delivery services of any network of libraries in the world.

Získej is a server application that is capable of managing user's document requests through its web client or local integration using the available API. The system is based on a request management module that handles the queue of incoming requests made by end users or by libraries that serve end-users. The system Získej uses several external systems as a data source (bibliographic data, patrons data, items status), therefore it is a typical integrated system that builds application logic on heterogeneous data in a new context.

The system Získej is a platform that allows the development of new plug-ins supporting other types of delivery services in addition to the base platform. At this time, the system supports ILL for both sharing an original document, its copies, and EDD.

The system Získej consists of the following basic modules:

- Authentication module and identity merging
- Request creation module for each type of delivery service
- Request management module (requests queue)
- Delivery timeout warnings
- Service quality monitoring
- Statistics

Each user and each library have to be registered in the system. There are several reasons for a mandatory registration. The first reason is the copyright and licensing rules that treat unauthorized access to content or some formats - for example, not all documents can be obtained in electronic form. The second reason is that by registering, users and libraries get a user account where they can set a number of parameters that subsequently affect the behavior of the system. Users can set the delivery address or determine whether they prefer a low price or delivery speed. Libraries can set up the normal business hours and scheduled closures so that the system can properly select suitable candidates for request processing. Libraries can also create white lists of other libraries they want to collaborate with, and black lists of libraries with which they do not want to cooperate or have received poor service. The white and black lists are used by the system to determine the order of libraries from which the document is requested.

In order to use the network of libraries equally and equitably, the system Získej sorts the list of suitable candidates for request processing based on load balancing. All document delivery requests are monitored and their timeouts is being watched. Warnings and alerts are being sent when there is threat of delay or when deadlines are actually exceeded.

An important feature of processing requests is the fact that at any stage the process may fail for some reason. If the source document is a physical unit such as a printed book or journal, it can be found out that the document is damaged, missing from the shelf, lost, etc. In the case of electronic documents, unavailability may be caused by poor quality of descriptive metadata, bad linking to full text, etc. Any request therefore goes through a defined workflow of statuses which are changed by an operator in each phase of the process. This status tracking is similar to the operation of commercial delivery services such as postal services or commercial delivery services like FedEx or DHL. At any time, both the user and the library can see the status and location of the request .

End-user GUI and UX is designed according to the common principals of ecommerce. A user selects a document to deliver, chooses the final delivery date and preferred format (an original, a paper copy, or an electronic copy). Request processing is run automatically or with partial support of the operator, depending on the complexity of each request.

System Získej uses the union catalog of all Czech libraries[6] as a data source. It consists of bibliographic records of documents regularly harvested by OAI-PMH protocol from the local databases of individual libraries. This union database provides information on which libraries own the required document. However, it does not say anything about the actual status of the document, that is, whether the required document is actually available at the moment of the request (it may already be out on loan or otherwise absent from the shelf). The NCIP (ANIS / NISO Z39: 83 - NISO Circulation Interchange Protocol) protocol, which is implemented in many local library systems, provides information about the current status of the document. By combining bibliographic data and document status information, the system gets all the data needed to identify the appropriate library to handle the request.

An important functionality of system Získej is the ability to work with and consolidate multiple user identities. The user can be a member of several libraries at the same time. For example, a user can be a member of an academic library in Prague and also visit the municipal library in their hometown. System Získej can merge these multiple registrations into one user account.

Conclusion

System Získej has been developed as a universal tool for supporting library collections sharing and delivery services. As free software it can be deployed in any environment supporting basic international standards such as MARC, NCIP, XML, HTML / CSS and UTF8.

Thanks to the access Ziskej provides to shared print and electronic collections, libraries can significantly expand their portfolio of information they offer and provide a faster and better way for educational and scientific activities to flourish, particularly in e-learning, PhD studies, and lifelong learning. A document delivered quickly and searched through a large number of resources, commonly unavailable on the web, is fundamental for any serious academic and scientific work.

References

1. BURNHAM, Emily. You can borrow a canoe at this Maine library. https://bit.ly/2kQCf24

2. GNU General Public License. 2007. https://bit.ly/2eXCFdY

3. JANES, James. Do Publishers Suddenly Hate Libraries? 2019. https://bit.ly/30vCL4M

4. MILLER, Ruth. Electronic Resources and Academic Libraries, 1980-2000: A Historical Perspective. P. 646-648. 2019. https://bit.ly/2LJxKAW

5. Open Access. Open access literature is digital, online, free of charge, and free of most copyright and licensing restrictions. https://bit.ly/2lLWvyw

6. Union Catalogue of the Czech Republic. https://bit.ly/2oMweVJ

7. Virtual Polytechnical Library (VPK). 2015. https://bit.ly/31Rxtla

8. What is INVIK. 1999. https://bit.ly/30PHq1b

9. Zákon ze dne 29. června 2001 o knihovnách a podmínkách provozování veřejných knihovnických a informačních služeb Knihovní zákon. https://bit.ly/34YGtqm