„Next Generation OPAC” systems

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1. Intro

The concept of "Next Generation OPAC" (new generation OPAC) is already an established formula that refers to new types of interfaces and features available to readers by modern libraries. This presentation deals in the first section with what is generally accepted and expected from such a system OPAC 2.0 (Next Generation OPAC). In the second section will be presented extended functional features available in the TINREAD.Expert system, WebOPAC module.

This material is the full version of the presentation that took place on September 7, 2011 at the National Conference of ABR in Sibiu, presentation was a practical approach, being made directly using an online system.

The presentation can be downloaded from www.tinread.ro, page „Brochures and presentations”.

1.1. „Next Generation OPAC” Concept

Unprecedented dynamic range of IT&C has led directly to the reformulation, reorganization and redefining concepts recent considered. We talked a while about Web 2.0 and, mostly, this is not a strictly technological revolution. This concept is a redefinition of traditional web space which is evolving as essential toward: user became a content provider.

Real "2.0" fashion did not let insensitive neither the libraries and librarians. Library 2.0 is already established within a coherent package of strategies and directions of development and modernization services. FRBR, together with the concept of "Multiple MARC Formats" (MARC multiple formats coexisting in a catalog) were named MARC 2.0 but the term seems not to have the required consistency in terminology field.

In this regard, in practical terms, the concept OPAC 2.0 is a well-defined term, even consecrated we could say. Mentioned in various contexts by professional works, the concept was clearly defined, structured and operationalized by a work that was dedicated to: BREEDING, Marshall. Next-Generation Library Catalogs. In: Library Technology Reports, Vol. 43, no. 4, July / August 2007, ISSN 0024-2586. Publication edited by ALA devoted this issue to the subject, and author Marshall Breeding, author and editor of www.librarytechnology.org, needs no presentation.
1.2. Standard features

In the above-mentioned work we review some of the most important problems of traditional OPAC systems: advanced search interfaces, insufficient intuitive, poorly adapted standards for Web 2.0, the lack of relevance of the clustering process results, limited search areas (library resources), limited handling of content (multimedia, full-text), lack of socialization functions etc.

We add a simple general observation that the traditional OPAC system gives the reader information available in traditional library modules (Cataloguing, Circulation, Acquisitions, Serials Control). With the advent of new modules (ERM, Federated Search, Digital Libraries etc.) OPAC systems have extended their functionality and gives users access to information through a single access point (portal) that transparently consolidates these resources.

In his work, Marshall Breeding analyzes the systems available on the market and summarizes essential functional features that define the new type of OPAC interface. These features that complement the traditional functionality are:

- modern web interface,
- enriched content,
- faceted navigation,
- search by keyword relevance,
- search suggestions (did you mean?),
- readers recommendations,
- reviews and
- ranking,
- RSS,
- Integration with social networks.

In the presentation of the practical approach, all of these features have been exemplified using TINREAD system.

1.3. Extended features

In addition to the basic functionality of a modern OPAC system, developers of library systems also provide other types of information and specific functionalities. In the second section of the presentation will be exemplified the most interesting developments available in TINREAD system, namely:

- Google like searches; integration of multiple features in a unified "package" search and presentation of information, including:
  - predictive input
  - search suggestions (did you mean?)
  - fuzzy matching
  - ≈ Rule
  - relevancy
  - search ranking
  - others
- Popular choices,
- Top titles; The most:
  - popular,
  - borrowed,
  - reserved,
  - best rated etc.
- Tag cloud
- Bookmarks
- Traditional Digital Library
  - images, collections of images, maps or other large files specially processed (zoom toolbar, Google like maps)
  - audio, collections of audio
  - video, collections of video
  - abstract, full-text (with search functions, highlighting the search terms, hyperlinks, etc.)
  - any combination of the above
- Extended Digital Library (read/write)
  - annotation system and interaction with the work text
    - highlights,
    - comments
    - critical notes,
    - text discussions (questions, answers, solutions)
    - errata
    - e-learning system (teaching guidelines)
    - … more (subject of a separate presentation material)
- Copyright management system (DRM = Digital Rights Management)
  - allowed access only to users with special rights
  - allowed access from the Intranet and/or Internet
  - number of allowed concurrent accesses to a digital material
  - age group which a material is addressed
  - free/with payment
  - other items in accordance with the DRM standards in effect
- Access to resources (covers, video, abstract, full text) available in external sources
  - WebOPAC functions corresponding with ERM module (Electronic Resources Management)
- Socialization of the common themes of reading (searching by topics of annotations made by readers)
- FRBR type navigation (cataloged MARC records) etc.

Mobile devices, Web 2.0 space
Will also be presented TINREAD interfaces available for:

- Mobile devices (mobile phone, smartphone),
- tool (toolbar) search available directly in the web browser,
- search gadget of the library system available directly on the desktop (Windows 7 / Vista).

In the presentation of the practical approach, all of these features have been exemplified using TINREAD system.

1.4. Traditional WebOPAC features

Since this material is dedicated to presenting the functionality of the new generation OPAC type, other traditional functions available in regular WebOPAC systems were not mentioned and are not the purpose of this presentation.

For completeness we found it necessary to mention some of them in order to highlight the essential characteristics of a traditional WebOPAC namely integration system with four modules considered standard for such systems: Cataloguing, Circulation, Acquisitions and Serials Control. In this regard were extracted in a separate chapter some relevant examples, not to claim to be exhaustive.

For a complete overview of the TINREAD WebOPAC module, please see the dedicated brochure.

2. „Next Generation OPAC” standard features

In this chapter we will present relevant screenshots for this group of functions with appropriate explanations available on the right side of the screen.
Web interface

A modern system must be easy accessed by users. And in the "internet age" the easiest way to access is a web page. Implementation of the latest web programming technologies provide, in addition to required features, an attractive way of finding / research information. Integrating pure librarianship information with other information (hyperlinks to external electronic resources) or types of object related to content (video, audio, full text) makes from web interface something not only attractive, but really necessary. TINREAD offers all these things integrated into an attractive web interface, easy to use.
At this point it cannot be acceptable an OPAC that doesn't provide enriched content to the bibliographic information.

Pure library information age presented in a linear and flavorless way has passed. Users expect to find and a cover image to find a picture of a famous author, to listen to a poem recited even by the author, to see a collection of postcards directly from home, to watch a trailer of a movie that the library held, to read material directly from the application interface. All these (and more, as you will see) are available in TINREAD.
Faceted navigation

Imagine a simple answer to a query, as shown above (172 records). The amount of bibliographic records that match the criteria can be very large and difficult to handle. It is therefore useful a filtering mechanism / refining of this information at a glance (click). This mechanism is provided by "Next Generation OPAC" system types. The left side of the screen allows a fast filter with the most used fields (author, publisher, year, etc.): a click on an author and the system will filter and extract / show only records of that author. In TINREAD, system administrator decides (operating needed settings) the refining search criteria that appear in this area.
One of the most widely used filter criteria is the subject of the work. TINREAD provide this filtering criterion in an intuitive and attractive way (tag cloud). What does this component? Take each record returned from the list and read related topics. Then count the number of times an issue arises in these descriptions. It is done a top 5 of the most commonly used topics. Finally, information is presented in an intuitive way: subjects with a leading position in this ranking are larger and bold font. The top position is lower, the characters are smaller and thinner. To see the topics in positions 6-10 you can press on the "More..." button.
The OPAC system is necessary to facilitate access to information. It is therefore very important that information appears first after a search, in other words, what is the default sort order? TINREAD provides sorting by relevance to the end user. Each field in a bibliographic description has a share, less or greater. For example, if a search term is found in the title, this result is more relevant (closer to user intent)! But if the same information can be found in the notes field... situation changes. TINREAD allows the library to decide the shares (for each field description) by setting the appropriate parameters to the system administrator.
Using online search engines (Google, Bing, etc.) made us dependent on certain behaviors.

One of these is the suggestion of a term in a period of time when I entered a search term in the wrong spelling.

Such a component is found in TINREAD as "Did you mean". If you accidentally enter a word spelled incorrectly, system suggests the nearest word (in shape).
A step in the grievous service of readers suggest to purchase securities. And in the TINREAD readers have the opportunity to recommend a title to be purchased by the library.

In addition to the information required to identify the acquisition (title, author, etc.), TINREAD allows the reader and introduce help information for the librarian purchaser: possible provider (where he saw the book), price, availability (online, at bookstore etc.).

TINREAD also allows the reader to request the reservation of title. Once a copy is available in the library, the reader will be announced to come to pick up the copy.
Users of "Next-Generation OPAC" system must be provided with more opportunities to express their wishes.

On the other hand, the library system has to turn to prevent and anticipate these requests through the diversification of services offered by the library (online).

In this way you can see on the left side of the page some of the features considered not only necessary, but mandatory for modern OPAC system type.
More and more sites that have information of interest to the end user provides the possibility for the latter to be able to add a comment on that information, provide a feedback.

For integrated library systems, this information is, in particular, information relating to bibliographic units.

TINREAD provides a tool with which readers can add a comment to a library catalog records and can thus enrich, supplement the existing information in the true spirit of Web 2.0.
Screen 10

**Ranking**

In addition to the ability to add a comment to a bibliographic unit, TINREAD allows readers to evaluate these works.

The rating is one classic with values from 1 to 5 (very poor, poor, good, very good, excellent).

Based on these ratings are averaged for each unit and to the user is shown an equivalent number of stars (from one star to 5 stars).

TINREAD also counts the most popular titles and offers in every moment information about the top of the most popular works.
Integration with social networks

The ongoing development of social networks (Facebook, Twitter, etc.) brought the effort of distributors of information to reach as soon as possible these networks.

A library is an important resource of information and an interest in the promotion of library collections and services must use a tool for access to these networks. TINREAD is a tool to integrate communications with social networks. A reader may notify friends that he just read an excellent book in your library!

With TINREAD everything is done with a click on the favorite network.
A traditional method of promoting a library's collections is the publication of newsletters, with new entrants in the library (or other works of particular interest, as determined by the librarian).

Obviously, lists and reports will be published online. Sometimes, the promptness with which information reaches the recipient can be critical. For this reason, the "Next-Generation OPAC" system type allows the library to create an RSS feed with these news. A reader interested in news or subscribe to the signals that flow and from that moment on, every time a new headline appears in this list, the reader will receive an RSS ad.
3. „Next Generation OPAC” extended features

In this chapter will present relevant screenshots to illustrate the extended functionality of the „Next Generation OPAC“ type available in TINREAD system, WebOPAC module.

A theoretical introductory presentation was made in the above, that each operation referred to be submitted in the following.
Predictive Input

A way to facilitate the search process is the predictive input.

After you type at least three characters, the system, based on the words of the indexes of the application (build online at run-time), suggests possible words.

These are presented closer to the input box when are more often presented in the indexes.

So the user does not type the whole word but simply uses what it suggests.

This saves time and avoids spelling errors.
¾ Rule (Google style)

To be permissive to typing errors (spelling) TINREAD uses an intelligent search method, borrowed from Google.

It's the so-called rule 3 of 4. If a user types 4 words in the search box, the system will display the first titles that meet all four criteria, then it will show those that satisfy criteria 3. Those which meet only 2 criteria are considered irrelevant. So if (only) one of the terms is mistyped, the user will still find the entry he want.

But you don't have to think of these numbers as the absolute numbers, but to consider the ¾ proportion of the total search terms.
One of the present information in accessing TINREAD page is showing the top titles.

These charts are updated instantly, at the time of accessing the information is consistent with the current situation.

Among those titles are shown more often borrowed securities, among the most appreciated, and top titles with the most reservations.
**Bookmarks**

At any point in the process of documentation of a reader it can mark a record as of interest (bookmark).

TINREAD offers the possibility of organizing these favorites in list titles (for example, a list may be with the bibliography for an exam while other list can contain holiday reading).

Moreover, these lists may be declared "public" and thus can be used by other readers.
Digital Library – Collections of digital objects

The digital library is a desideratum of the public in the present context. Users expect to find full information in an easy way: with a click to arrive directly to the original material.

In TINREAD you can load materials into various types of containers/repository (local, external hosting e.g. YouTube etc.).

Multimedia materials can be assigned to the various types of records from a catalog: bibliographic units, records of authorities (pictures) and even exemplary level.

For each digital object is available for setting the parameters of DRM (copyright).
TINREAD allows the loading of multimedia materials in different containers. The container represents the physical location of a group of objects. We could have containers for service, others for full-text, others for video, etc. according to the corresponding storage spaces. In TINREAD is implemented technology that enables these containers to be external application server: a server, another dedicated site etc.

An example of this is the YouTube site. A librarian just select YouTube and media material container is loaded on this website, the links between library catalog and YouTube is done automatically.
A site without images to draw users is a site hard to imagine. An online catalog of the library that can provide this service is unattractive, never invites the user to return. However, you can submit an image simply is very little.

TINREAD allows you to display them in slide-show mode, allows you to zoom in one sense or another etc. Allows everything that is allowed on sites specialized in images (photo). But all these sites from the desire to optimize traffic shows these images in a low quality format.

However, TINREAD allows (for users with appropriate rights) even printing the image quality of the original.
There are many websites that offer to audition (but mostly for sale) audio files. However, a catalog of the library must provide customer service, ability to describe a material media, on multiple levels (one record just cited should be allowed to join multiple digital objects).

TINREAD allows the description of this as a single bibliographic record (of an audio CD, for example) may be associated with the contents of that CD, with tracks that are on the CD. It through the complex structures of digital objects that can be aggregated (grouped) together.
The collection of multimedia materials available from the library may include videos prepared properly (streaming). The user does not have to download the whole file to be able to view the content, but can do it directly online, on the website of the library.

As I mentioned already, the library can use its own storage system or from YouTube (or similar) to publish these materials. It all depends on the settings made by the administrator. Further to the librarian that loads these files or for the end user, this is irrelevant (transparent).
Bibliographic information, available traditionally are supplemented by the contents of the work.

User can search for keywords in the full text, and the system will display the appropriate results highlighting the search terms in text.

Also, for full content type are available DRM settings (Digital Rights Management) in order to grant access to the work proper under copyright.
For any digital object loaded in the system, it can determine the appropriate access rights in accordance with the standards of the DRM (Digital Rights Management).

You can determine whether the material can be viewed only by authorized personnel or your Intranet (the stations are physically inside the library) or directly from the Internet. You can also limit the number of users who have access simultaneously to the digital object. If the maximum number has been reached, the user can view a summary (trailer, preview) if it is available on your system.
What is specific to the TINREAD system and distinguishing it from other digital library systems is the possibility of interaction with the text: highlights.

These highlights simulates the traditional emphasis on text, self study, personal notes on the text. Each of these notes refer to a specific passage in the original text (selected by the user) and can be attached to topics, title, and description. For example, a reader recognizes more online titles and mark with notes and topics (tags) different passages. Finally you can see all the passages relating to a certain topic (tag) or it may print the bibliography associated with these passages.
The highlights system available in TINREAD is a module itself. His detailed presentation is covered by a dedicated material. In the present we will summarize a few of the functions to list.

Highlights can be private or public.

Highlight (a passage selected by user) may be a comment on the text, or it may be a question (addressed to other readers), or a question addressed to specialized personnel. These requests can be answered by clicking on the appropriate menu. Best rated response can be declared "Solution" (final).

Other types of highlights are intended for the e-learning system (indication of teaching) and so on.
An OPAC system of new generation is by excellence an integrator system. Technical protocols used to access information are transparent to the users of this portal integrator system (one-stop point).

Access to full-text available on Google Books is carried out from the user’s point of view the same as accessing local resources of the library or any other resources. Everything you need to take care of the user is to check the resource in which to look for (one, several, or all).

After showing the result list, a click on a record lead directly to the original interface that contains the full text of the paper.
An OPAC system of new generation is integrating with ERM module (Electronic Resources Management) and provides access to these resources.

System administrator operates data needed for each resource individually (in our example, EBSCO), and these are available to users transparently (according to the usage policy).

From the point of view of the user, accessing a resource (external) means, as always, ticking.

OPAC system is a module that adds up the functionality of the integrator systems specializing in information retrieval.
Screen 28

FRBR navigation

A modern OPAC system includes and uses not only web-based technology, as well as specific technology domain. FRBR is new technology present in such systems.

Worldwide there are currently only a few systems that have implemented native FRBR. TINREAD is one of them.

However, a special feature is the fact that TINREAD in the WebOPAC, users can use the FRBR-like browsing (opera → expression → manifestation) even for MARC records (without manually processing). Online conversion algorithms ensure a success rate of automatic processing (MARC → FRBR) of about 85%.
WebOPAC modern systems are designed starting from a clear finding. Users don't have to adapt the methods of publication/information search specialist/traditional systems of the library. The library must have an active attitude and offer users new services (search) even with their expectations and in line with current web standards. The library cannot wait passively, but users must meet them where they are.

In the figure below, a toolbar for search in OPAC is available directly in your browser.

The library is closer to its users.
Similarly, for any other browser, TINREAD provides ways to integrate search with it.

In the example illustrated above, the feature type "search provider" is available for Internet Explorer.

Library users may install these tools on the Web site of the library, and can thus be closer to this in particular by the fact that the library system "speaks".

Library system thus becomes a true "Google Library", borrowing from the methods of use expected of readers, giving them the option of professional access to bibliographic information and content.
Another possibility of access the information available in the catalogue of the library is using the TINREAD gadgets.

This OPAC "gadget" is present all time on the user's desktop, and the access of the catalog (search) is done directly by typing the search terms. Response is prompt results list. A click on one of these leads directly to record details presented in the original OPAC interface.

One more step closer to the library!
Mobile phone interface

For mobile devices TINREAD offers a personalized and adapted OPAC interface to its characteristics (display size, method of typing, minimal internet traffic).

The interface is concise and essentialized as shown in the figure.

The library catalogue is closer to the reader, is mobile... as it is the world in which we live.
4. Traditional WebOPAC features

In this chapter will be presented relevant screenshots to illustrate the functionality of the existing traditional OPAC systems. I considered necessary such a chapter in order not to create a false impression that this is an exhaustive presentation of the WebOPAC system available in TINREAD.

The traditional functionality presented in this chapter is the base of any WebOPAC type, and has already became a paradigm to the domain. For TINREAD system, these functions have been the subject of other presentations. The presentation is devoted to the facilities for „Next-Generation OPAC”, and in the list below will be illustrated summary and selective, some of the most important features that should be available in an OPAC system.
Advanced search

Any traditional OPAQUE system offers users the "advanced search", i.e. an exact search on multiple fields, after several criteria that are connected logically with Boolean operators.

You can search based on local data sources of type Z39.50 or other external data source as defined by the system administrator.

As a result of your search is submitted the titles list that match your search criteria, with the standard functions (selection, printing, exporting, etc.).

The results list can be saved, reused, combined with one another, etc.
Expert search

For librarians and specialists are usually available complex search interface and more powerful.

The user makes requests for search based on a standardized syntax can express very complex criteria, otherwise it cannot be formulated in the advanced search interface.

As a result the system presents, in unison, a list of results that can be handled as above.

The results list can be saved, reused, combined with one another, etc.
Integration with the Cataloging module

WebOPAC interface integrates with the Cataloging module not only through the possibilities of search in the catalog, but also through access to other data available in this module. An example is consultation of availability of holdings, information extracted from the module, and the situation of each copy (available in the Circulation module).

Also, the user can navigate through the information system of hyperlinks pointing to files of the appropriate authority.
Integration with the Circulation module

After authentication, the user has access to the personal account (My account) where the relevant information is available from the Circulation module.

The user can check the status of loans, reservations, detentions (for borrowing), overruns, penalties etc.

Also in the personal account user can access the pages dedicated to:
- personal details
- messages
- saved searches
- reviews
- recommendations
- transactions

Each of these will provide the appropriate information.
After authentication, the user has access to the personal account (My account) where the relevant information is available from the Acquisition module.

In the current example, the user is able to suggest recommendations for library acquisition.

As they are validated, accepted and / or approved, the user can see how their current situation (if the system administrator has set the appropriate user rights class).
After authentication, the user has access to the personal account (My account) where the relevant information is available from the Serials Control module.

In the example on the left screen you can see the description of issues as a system built online-based real-time operation of receptions in Serials Control module.

Also, the user can see the description of serial numbers available before the launch of receipt in automatic mode and this is available by viewing the relevant fields (for each location).
5. IME Romania

IME Romania is a company operating since 1995 and has dedicated the work to develop integrated library systems, providing turnkey systems and related services. Detailed information is available at www.ime.ro

IME Romania is the TINREAD system developer with expertise and resources available to ensure integration and implementation of complex national/international. One of the most important such systems is IFOS operated by The Library of Congress, whose Vice President Anthony R. Pierce characterized as IME services provided by "the excellent Technical Support and expertise of IME Romania in a fairly complex client/server environment, that greatly impacted our productivity."

Since 2006 IME distributes TINREAD system in Asia (Taiwan, China, Hong Kong) with currently 35 deployments in the area, of which 26 in version TINREAD.Expert, particularly in large academic libraries (ex. China University of Science and Technology) and the largest public libraries in Taiwan (ex NTL).

IME is a member of the 2009 Gold OPN (Oracle Partners Network). In 2011 IME (in partnership with IBM) entered the final stage of selection to tender MMIS (MultiMedia Information System) organized by HKCL (Hong Kong Central Library), a stage in which has qualified only one other competitor (from the U.S.). The system is one of the most complex information technology projects launched in 2011 worldwide to a consortium of libraries (88 libraries connected to the system, totaling over 12 million USD).

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We hope soon to give you the news that a Romanian company will implement national digital library system in Hong Kong ...