

# Net-Interactive Documents (NID) LIBRARY SYSTEM

Online Knowledge Management & Digital Publishing Platform

**Administrator Manual**



# NID Library

The Net-Interactive Documents (NID) library system is capable of using the inherently interactive nature of digital media. It enables material available in an information repository to integrate the innovations offered in today's online world. This next generation knowledge management system presents content beyond the scope of traditional books and documents. This content (audios, videos, infographics, discussions etc.) is exponentially increasing in online communities and can significantly add value to conventional digital documents and books. NID system also allows convenient mapping of annotations for self-use and for use in peer groups. It also allows you to send feedback, add discussions /questions on every page.

The core philosophy at work behind the development of this new information management system was to develop a knowledge repository that is more open, interoperable, and reusable at both application and content level. To achieve this goal, at the application level, the system uses a modular service-oriented architecture approach. The system consists of components such as management system portal, library access portal, indexing system, imaging and Optical Character Recognition (OCR) engine and a database. The system architecture allows deployment of these components as separate service instances working seamlessly to create a comprehensive digital information platform. The responsive user interface design allows the system to be used on all major devices and operating systems.

To achieve the interoperability and reusability aspect at the content level; the data in the library is processed, stored and presented using the International Image Interoperability Framework (IIIF) standard.

## *Work in Progress:*

NID platform also makes use of artificial intelligence (AI) applications on the library data. The NID system is capable of running NLP algorithms, and utilizing open-source language knowledge models. This in turn is a first step to allow automated topic detection and interlinking of similar contents. The library can also make use of deep learning algorithms for automatic image object detection. More details on this are given in system's User Manual and Outlook section at the end of this document.

For updates and links related to NID Library, browse the following links

 <https://www.nid-library.com/Article/View/92>

For a quick introduction to the system please refer to the URLs below

 [Philosophy behind NID](#)

 [Das Arbeiten mit NID](#)

NID Platform is created and copyrighted by “NID Management Team”

(An introduction to NID by Hermann Maurer)

 <https://youtu.be/jzs8XO3bkRg>

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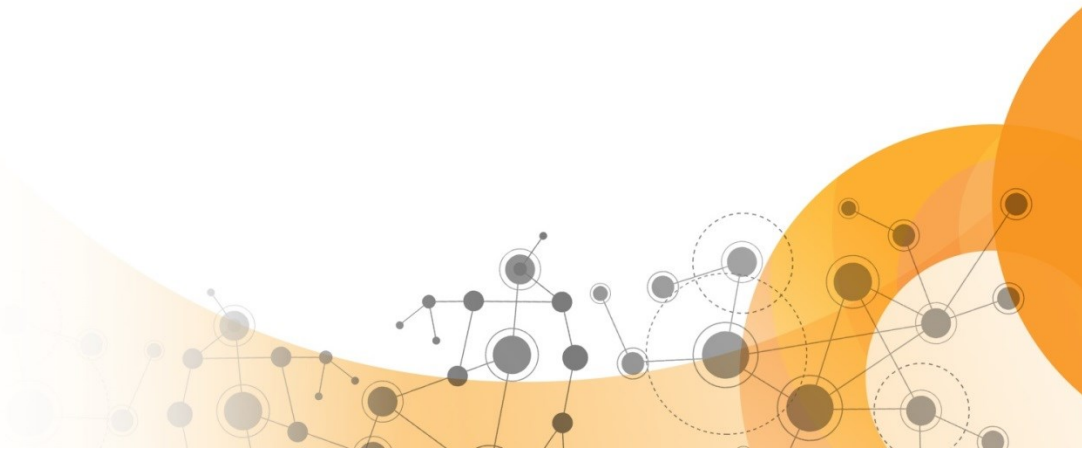
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## About this Manual

This manual is designed to help NID system administrators and other management user accounts such as editors. The manual provides detailed information about features and functions of the NID management portal. This document is provided for information purposes only. NID Team has endeavored to verify the completeness and accuracy of information contained in this document, but it does not take the responsibility for possible errors or omissions in this document. Therefore, the responsibility for the usage of this document or the results of the usage falls entirely upon the user. Furthermore, the NID Technical Team does not make any explicit or implicit guarantee regarding this.

## What's in this Manual?

This user manual includes:

- Information on access to the management portal
- Overview of management portal features
- System Use Example
  - Adding a new document in the system
  - Application of OCR, Object Detection, Topic Detection, TOC creation
  - Book category management
  - System settings

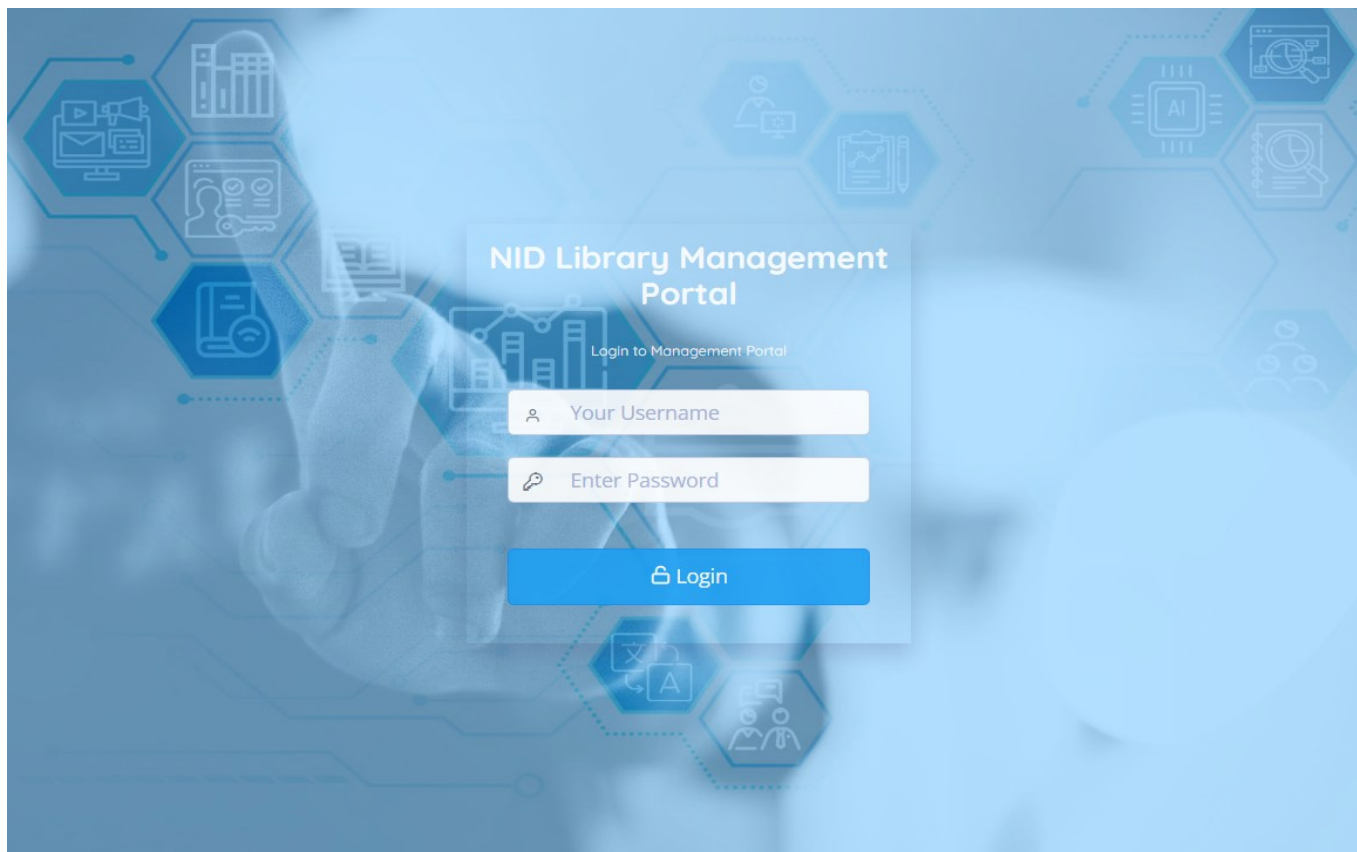


Figure 1: NID Management Portal Login Screen

## Management Portal

The library system administration and content publishing functions are made available in a separate module of NID Library called NID Management or NID Administration Portal. This responsive web-based system can be deployed as an independent web application instance on a NID content management server. In order to access this portal an existing administration account is needed (This information is shared with administrative users at the time of library deployment). Further administrative access accounts can be created using the user management feature within the portal.

Management portal is available to the user types defined in the following NID users table. Out of the two defined categories the editor accounts have access to functions related to library content management, while the administrative accounts have complete access to content, system and user management.

<p><b>NID Editor users</b></p>	<p>An editor account has access to library contents management functions. It can view, edit, and add information (annotations, wiki articles, quiz, groups, reviews) in the library portal. It can also access the administrative portal of the library system and can add/edit the categories, documents and content related meta information such as DRM (Digital Rights Management 0/1/2) levels of added documents, Table of Contents, Author biography, title images etc. The system administrators assign certain categories to an editor account where he/she has rights of content curation. Editor can create new categories/subcategories and upload documents.</p>
<p><b>NID Administrator users</b></p>	<p>The system administrator account has complete access to all system functions. The account can view and manage all contents related to documents and article collections in library portal and also has full access of administrative portal. The administrative accounts, besides having full access to editor and user functionality, has additional access to system related settings, user and group management.</p>

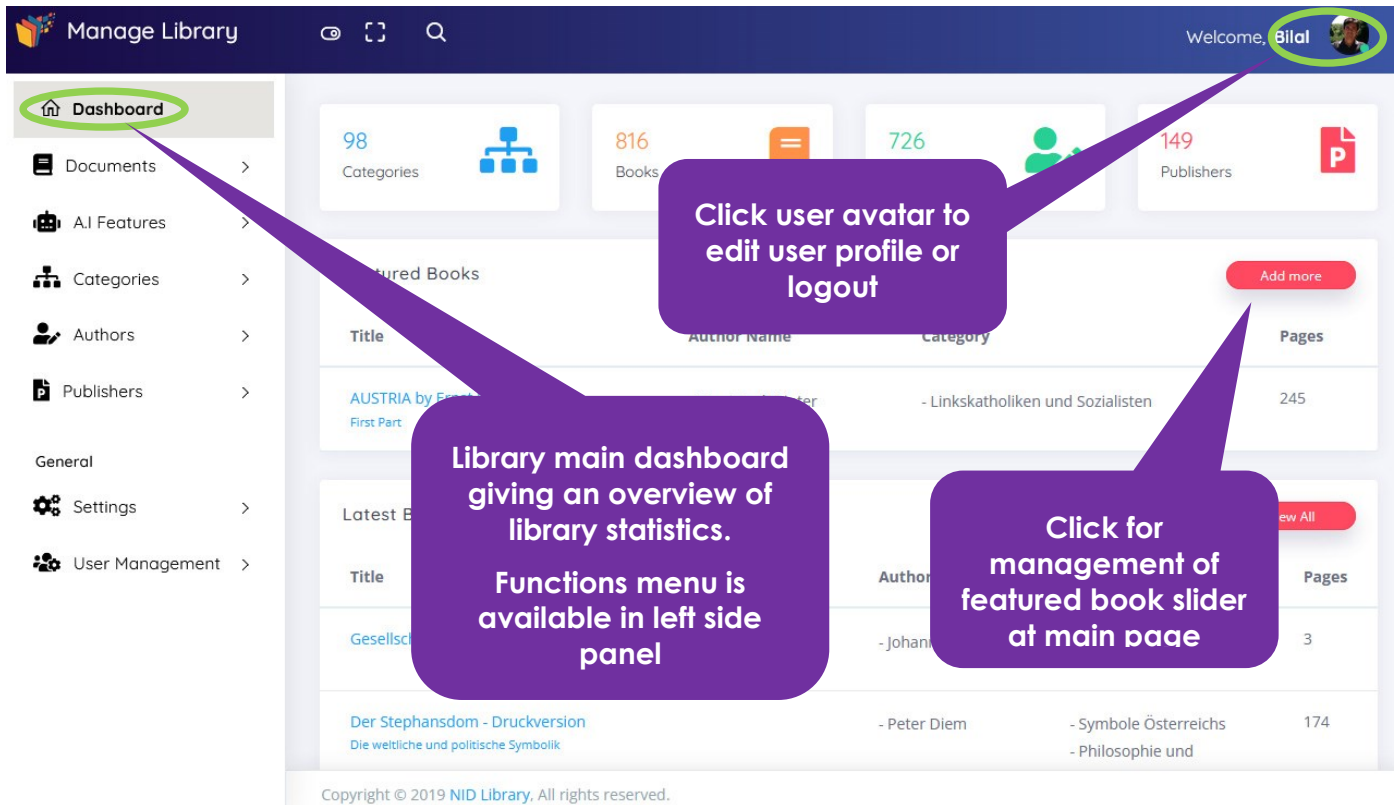


Figure 2: NID Management Portal main dashboard screen

## Management Functions

The management functions available in the library are described according to the menu available in the left panel.

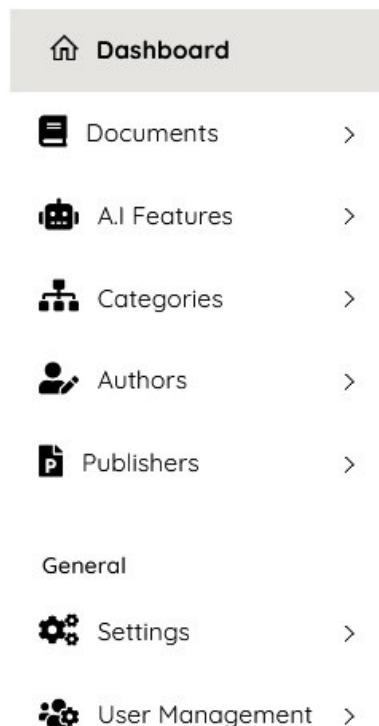


Figure 3: Administration portal main menu



Figure 3 displays the expandable main menu links. The links include functions related to Document management, Advance functions (A.I.) performed on added books/documents, Category management, Authors/Editors management and Publisher management. The Settings section includes system email management, library document type specification settings, digital right management, license type settings and OCR language related settings. The User Management sections allows library administrators to add new users, manage existing users, create and assign user roles.

A user may click on each to expand and reveal further links.

The access to these features is dependent on the type of administrative user. While editors only have access to content related features, the administrators can access and use all menus and functions of the management portal. Details of each main menu link are explained in following sections.

## Documents Menu

The documents menu items include links to different functions. They are used by the library administrators to properly populate the library with new contents. Following are the details of sub-menu links:

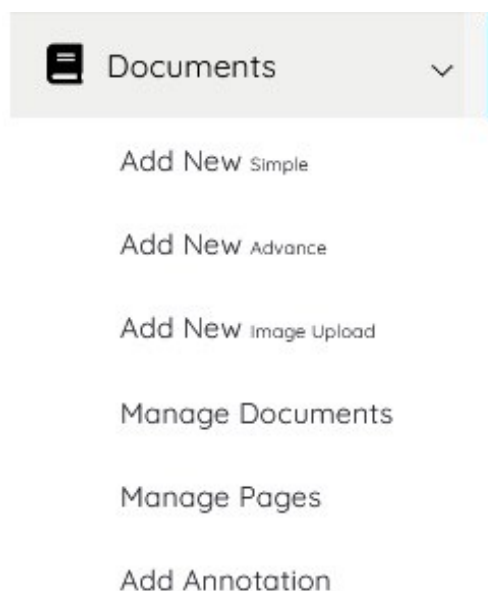
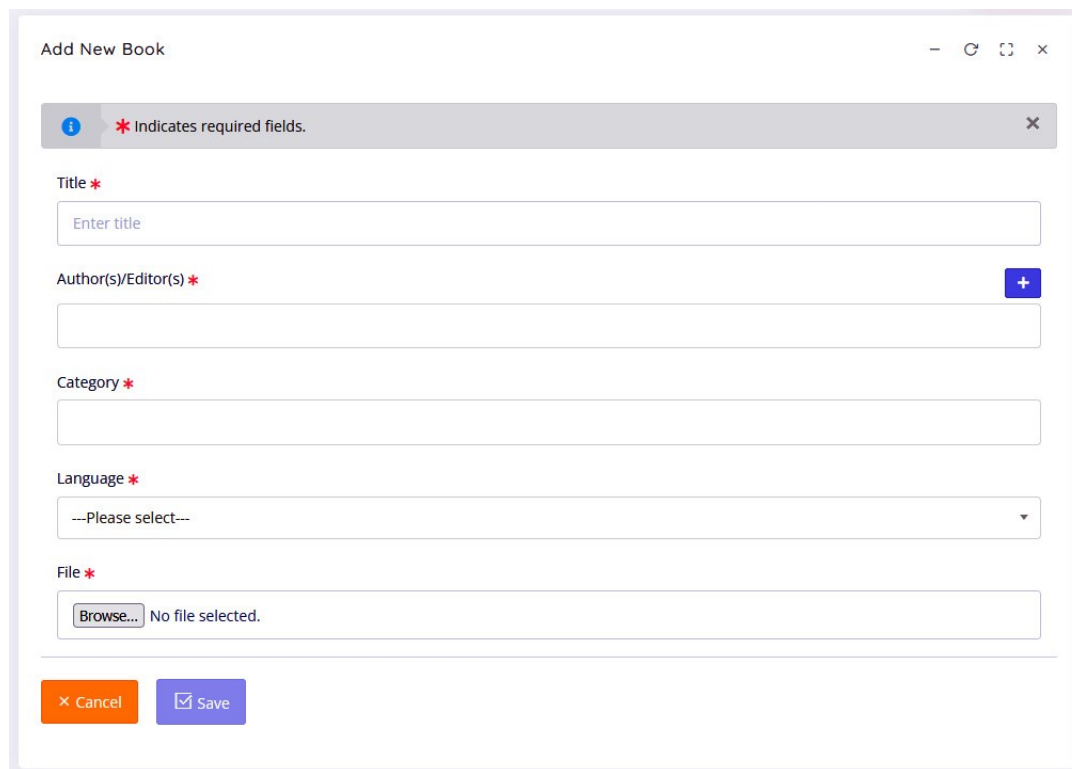


Figure 4: Documents functions sub-menu

**Add New Simple** is used to add a book to the system with limited metadata information. The user only provides essential information such as Title, Author/Editor, Category, and Language. There are fields that include pre defined selections. The book addition form provides the facility to add new selectable items using a “+” button where applicable. These selectable items in this section include Author(s)/Editor(s), Category and Language.



The screenshot shows a web form titled "Add New Book". At the top, there is a legend: "i \* Indicates required fields." The form contains the following fields:

- Title \***: A text input field with the placeholder "Enter title".
- Author(s)/Editor(s) \***: A text input field with a blue "+" button on the right.
- Category \***: A text input field.
- Language \***: A dropdown menu with the text "--Please select--".
- File \***: A file upload area with a "Browse..." button and the text "No file selected."

At the bottom of the form, there are two buttons: "Cancel" (orange) and "Save" (blue).

Figure 5: Simple form for easy document upload

The “Add New Simple” mode sets the content type as document. This type is usually meant for shorter documents with less metadata/cover information thus the “Detail page” is skipped by default; when accessed, the viewer directly opens the first page of the document.

**Add New Advance** is used to add a document to the system with complete metadata. The user provides necessary information such as Title, Volume, ISBN, Date, Place, Author/Editor, Category, Publisher, Language, License, Keywords etc. The mandatory fields are marked with a “\*” mark, the optional fields can be left blank or can be later populated through the “Manage Documents” feature. There are fields that include pre defined selections. The document/book addition form provides the facility to add new selectable items using a “+” button. These selectable items include Author, Publisher and Sources. The quick item addition through this method can be further edited and enriched in respective menu links. It is important to note

that at present, NID only processes PDF documents (More formats for content processing will be available soon, e.g. docx). Users must select source PDF document to upload. It is also very important to select right “Image Density” of a book being added to the system. System offers a density selection range from 50 to 300 dpi, default selection is 200 dpi. A larger value yields better image quality but at the cost of larger file size.

The screenshot shows a web form titled "Add New Book" with various input fields. A legend at the top left states: "i \* Indicates required fields." The form is organized into two columns. The left column includes fields for Title, ISBN, Volume No., Author(s)/Editor(s), Publication Date, Country, Language, Manager Emails, Moderator Email, Keywords, Image Density, and Image Type. The right column includes Sub Title, Total Volumes, Book/Document Type, Category, Publishing House/Publishers, Source, License, File, Priority, and Book DRM. At the bottom are "Cancel" and "Save" buttons. Three purple callout boxes provide additional instructions: 1) "Book metadata fields, mandatory ones are marked with \* You may select and add multiple categories/subcategories and authors" (pointing to the Title, ISBN, Volume No., Author(s)/Editor(s), Category, and Publishing House/Publishers fields). 2) "Manager Email (if set) is used to receive notification emails related to book. If you provide/set Moderator Email, the interactions/annotation added will only be active after approval from the moderator." (pointing to the Manager Emails and Moderator Email fields). 3) "File Upload field, please do select correct DRM level and image density before uploading. Uploading may take a while for larger books, the browser status bar at bottom will show the upload progress" (pointing to the File, Image Density, and Book DRM fields).

Figure 6: Advance Document addition form

Another important setting to note is the DRM level of book being added to the system. It offers a value selection ranging from DRM-0 to DRM-3. The DRM-0 selection means rights management is disabled and access is granted to all users including the anonymous ones. The documents having DRM-3 will only be available to system administrators for internal use.

The Manager Email(s) property can have a single or multiple valid email addresses. If set the given emails will receive notification emails from the system about added annotation and user interactions. The Moderator Email(s) if set will enable the annotation moderation feature for the document. When a new annotation is added to the document the moderator email will receive a notification with a link to manage the annotation. The moderator using the link can either allow the annotation in as is form or edit and approve or delete/make private. The moderator needs to login to the system to perform these tasks.

The priority value (1, 2, 3, 4) sets the probability of appearing in the display slider of main library page. Following are the selection criteria in display slider, based on the set priority

- Priority 4 is not displayed in slider
- Priority 3 (there will be THREE randomly selected books in scroll bar from this section)
- Priority 2 (there will be FIVE randomly selected books in scroll bar from this section)
- Priority 1 (there will be EIGHT randomly selected books in scroll bar from this section)

By default priority level 2 is set for the added documents.

Once a document is uploaded, the NID system in the background starts its image processing engine to generate page images. These images are optimized to be served through NID's IIIF image server. The system also creates the full text search index of the document using the selected language model.

**“Add New Image upload”** This option allows NID editors/administrators to create a new document using selected image files. The option allows use of high resolution images (e.g. maps) to create NID library contents with greater visual details. Users can use Page management features to adjust image organization at any stage.

The PDF conversion process may take a few minutes to complete depending on the system load. It is important to note that indexing, application of OCR and Object Detection process should only be applied after the imaging related processing on book is complete. User can verify this by going to the “Manage Documents” Menu and see the Book Log data by clicking the orange **Load** Log button.



The log will indicate with a message once the PDF conversion process is complete and search index is created.

**Manage Documents** link in menu facilitates in management of existing documents in the system. The Section shows the option to adjust featured book slider (available on the main library page) at the beginning. The horizontal scroll bar/featured book slider displays cover images of 16 documents randomly selected based on priority model. Administrative users can use the featured book setting option in manage documents section to add any document in library to be part of featured slider. In case of any addition in the list, the slider will start with added document followed by other selected documents based on priority model.

The selection is followed by the list of all books in system (latest added displayed first). Users can perform meta information editing/delete operation on the documents by clicking on the respective action button for each book in list.

Please note that Editors will only have access to Edit/Delete features of documents of assigned categories. While the admin users have management rights of all documents.

Besides editing/addition of general meta information already added, user can upload a more appropriate “book cover image”. The cover image update is needed in case the existing cover image extracted from first page of the book PDF file is not suitable. Users can also check the progress of image processing, and OCR/Indexing function. These processes are performed in background by the system. The progress of the processes can be checked by clicking on **Log Load** buttons.

While managing a document’s data through edit link in Manage Documents Section, “**First Page**” setting can also be updated for a book. This feature helps library administrators to relate and adjust digital book’s page numbers with physical book’s printed page numbers.

Users can also set book ID number in case the present book is to be used as a replacement of an already added book. The book URL is based on the book ID number and special care must be taken while editing this automatically assigned value.

The screenshot shows the 'Manage Books' interface. On the left is a sidebar with navigation options like 'Documents', 'Add New Simple', 'Add New Advance', 'Add New Image Upload', 'Manage Documents', 'Manage Pages', 'Add Annotation', 'AI Features', 'Categories', 'Authors', 'Publishers', 'General', 'Settings', and 'User Management'. The main area displays a table of books with columns for S#, Title, DRM, Pages, Priority, Indexed, and Actions/Log. A search bar is at the top right. Three callouts provide additional information:

- By typing few letters, one can narrow down the list to documents of interest**: Points to the search bar.
- Log display giving information about book processes performed or being done**: Points to the 'Actions/Log' column.
- Editing and delete function for book**: Points to the 'Edit' and 'Delete' options in the 'Actions/Log' column.

S#	Title	DRM	Pages	Priority	Indexed	Actions/Log
1	Gesellschaft Außerseiter Buchbesprechung Johann Günther Download PDF Added By: hmaurer	Level-0	3	4	Yes	Load, Edit, Delete
2	Der Stephansdom - Druckversion - Vol. 1 Die weltliche und politische Symbolik Symbole Österreichs Philosophie und Religion Heraldik und Vexillologie Peter Do AD	Level-0	174	1	Yes	Load, Edit, Delete
3	M Kl Bu He Do Added By: hmaurer	Level-0	6	2		Load, Edit, Delete
4	Wo ich seit langer Zeit die vergnüglichsten Tage verlebt habe. - Vol. 1 Buchbesprechung Helga Maria Wolf PUBLISHERS					Load, Edit, Delete

Figure 7: Manage Documents main screen

Editors and administrators can also define how a document viewer menu is presented to the library users. A document's menu can be set to show full menu, a shorter simpler menu or a very limited basic menu. One can also decide if anonymous users are allowed to add interactions (e.g. annotations, discussions) or only registered and logged in users can add additional contents to the document.

A blue button labeled 'SCAN ME' is positioned above a QR code. A callout box points to the QR code with the following text:

**Scan/Click to view category/sub-category creation and document upload demo video on YouTube**

i \* Indicates required fields.
x

**Book Id \***

**Sub Title**

**ISBN**

**Volume No. \***

**Author(s)/Editor(s) \***

**Publication Date \***

**Source \***

**License \***

**Priority \***

**Book DRM \***

**First Page Number**

**Manager Emails (for notification emails)**

**Moderator Email (enables annotation moderation)**

**Menu Type**

- Both modes allowed, Default simple mode
- Both modes allowed, Default full mode
- Only simple mode allowed
- Only full mode allowed
- Basic Menu for anonymous users

**View Count**

**Title \***

**Information**

**Total Volumes**

**Book/Document Type \***

**Category \***

**Publishing House/Publishers \***

**Language \***

**Keywords**

**Book Cover Image**

**First Page Starts From**

**Annotation and Discussion Access**

- Both modes allowed without login
- Both modes allowed only after login

x Cancel
Update

If document has a Public Domain license, the NID library will provide a PDF download link of the source available at the details page.

Using the edit function, the existing metadata can be updated. Some fields are un-editable because of linked references.

Keywords help in document's metadata search

Document's viewer interface settings determine how a documents' menu will look and user interactions behavior.

Figure 8: Editing a selected document

The main Documents menu further provides a link to **Manage Pages** where a user can select any Document for page record display. The user can further edit page sorting order, enable or disable page view for appropriate presentation of contents. The page edit option in the action menu also allows the update of page source (image) features. This is useful if any Document page needs adjustment/editing or replacement in the system.

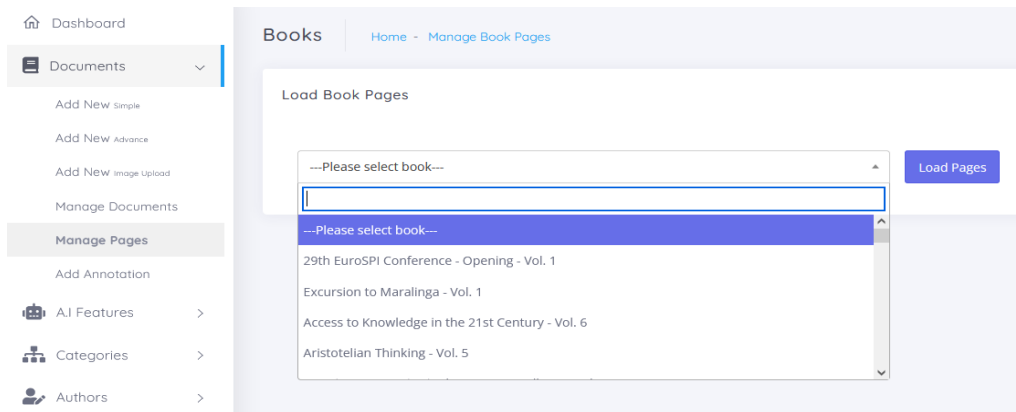


Figure 9: Selection of a document as a first step to edit/manage pages

This screenshot provides a detailed view of the 'Manage Book Pages' interface. It includes three main sections:
 

- Load Book Pages:** A dropdown menu showing 'Excursion to Maralinga - Vol. 1' and a 'Load Pages' button.
- Manage Book Page Manager Email:** Fields for 'Start Page' and 'End Page', a text input for 'Manager emails (, separated)', and an 'Update' button.
- Book Pages:** A table listing loaded pages with columns for S#, Source & W\*H, Page No., ManagerEmail, Title, Sort Order, Is Active, and Actions.

 Two callouts provide additional information:
 

- A purple callout points to the 'Manager Email' field, stating: 'In addition to manager email specification of complete document's manager one can specify managers of selected pages as well. This helps if the document is large one with multiple authors e.g., conference proceeding.'
- Another purple callout points to the 'Edit' link in the 'Actions' column of the table, stating: 'Use the Edit link to replace the page image.'

 The table data is as follows:
 

S#	Source & W*H	Page No.	ManagerEmail	Title	Sort Order	Is Active	Actions
1	<a href="#">Click to open</a> 1654 * 2339 pixels	1		1	1	<input checked="" type="checkbox"/>	
2	<a href="#">Click to open</a> 1654 * 2339 pixels	2		2	2	<input checked="" type="checkbox"/>	
3	<a href="#">Click to open</a> 1654 * 2339 pixels	3		3	3	<input checked="" type="checkbox"/>	
4	<a href="#">Click to open</a> 1654 * 2339 pixels	4		4	4	<input checked="" type="checkbox"/>	
5	<a href="#">Click to open</a> 1654 * 2339 pixels	5		5	5	<input checked="" type="checkbox"/>	

Figure 11: Page management feature, list of loaded pages



The screenshot shows a web form titled "Edit Book Page" with the following fields and options:

- Book Title \***: Text input containing "Excursion to Maralinga".
- Page Title \***: Text input containing "1".
- Manager Email**: Text input containing "Manager emails ',' separated".
- Sort Order \***: Text input containing "1".
- Image**: Section with a red warning: "New image dimensions should be w\*h = 1654\*2339 pixels to match the positioning of existing annotations". Below it, a radio button is selected for "Single page pdf". A file selection area shows "Browse..." and "No file selected.".
- Enforce new dimensions?**: A checked checkbox.
- Keep Annotations?**: A checked checkbox.

Two callout boxes provide additional instructions:

- A purple callout box points to the Image section: "It is recommended that replacement page image is of same dimension. One can also upload a single page pdf file to replace a document's existing page".
- A purple callout box points to the "Keep Annotations?" checkbox: "In case of minor changes in base contents of page, one may like to keep any existing user annotations to the page.".

At the bottom, there are two buttons: "Cancel" (orange) and "Update" (blue).

Figure 12: Page Edit form

**Add Annotation** link can be used to add annotation to any page in an automated way. This function is basically a test point for the “Annotation API” meant for systematically adding bulk annotation to the NID documents.

The following image shows the test interface of the annotation addition process. Where one can specify a document page URL, give keywords that are searched in the page and annotation text (it can be simple text and/or html anchors for hyperlinks). All found instances of keywords are marked with annotation boxes in the page and a given annotation code is used for the added annotation.

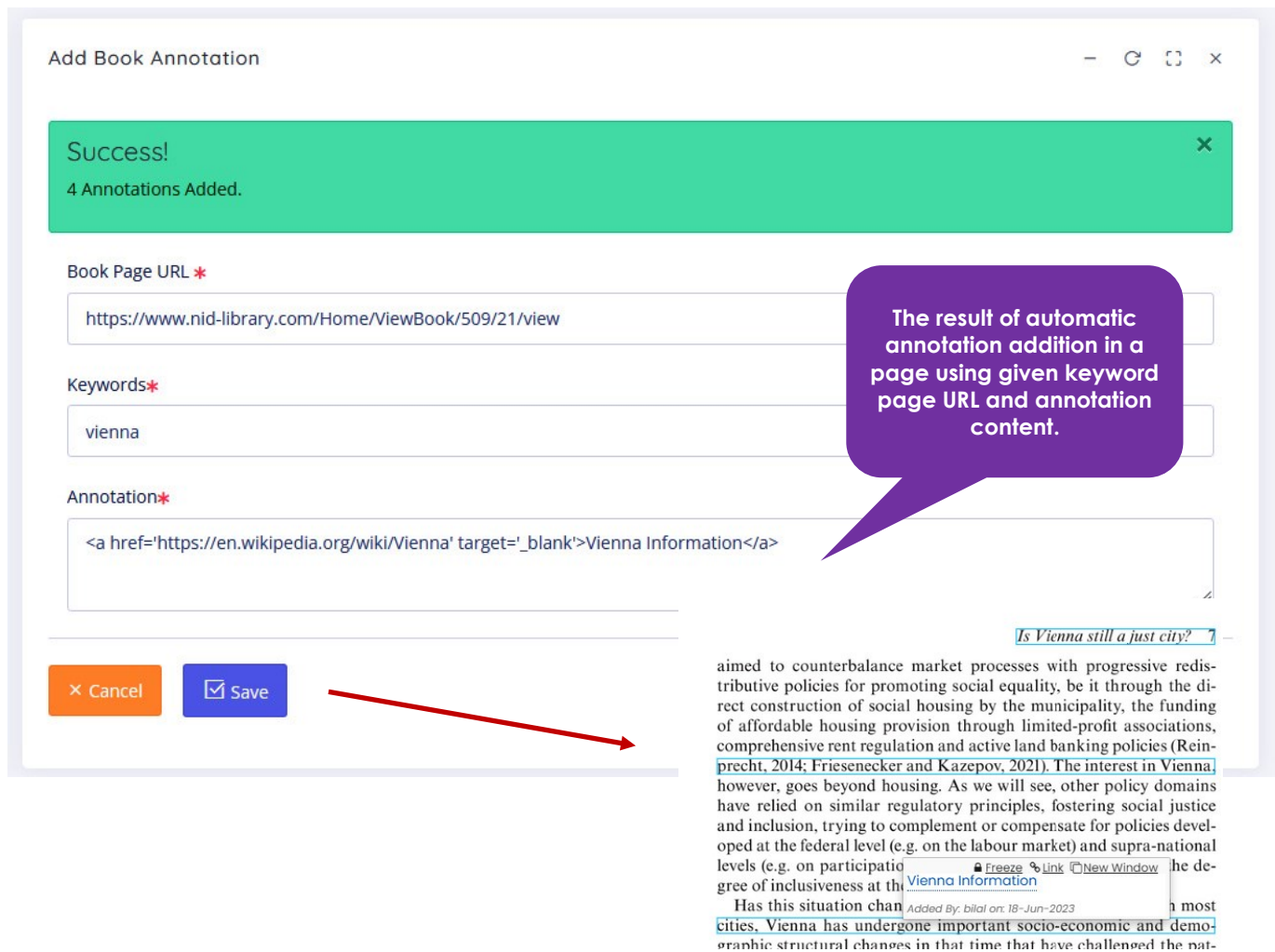


Figure 13: Test form for adding annotation automatically

The underlying annotation API works in the following way.

For example we like to programmatically add annotations to a page of any NID document.

Example URL: <https://www.nid-library.com/Home/ViewBook/220/3/view>

We are targeting a phrase “christopher columbus” in this page and would like our annotation API to automatically add annotations around these words/phrase. The contents of this annotation are

- a masking text that appears in annotation box (an italian explorer)
- a link to this text ([https://en.wikipedia.org/wiki/Christopher\\_Columbus](https://en.wikipedia.org/wiki/Christopher_Columbus))

By default the API will create annotation for all found instances of targeted keyword/phrase, however one can limit this with “annoperpage” additional parameter.

The API call for this example scenario is given below

```
https://www.nid-library.com:8080/annotation/createinbulk?key=XXXXXXX&maskingtext=an Italian explorer&keywords=Christopher Columbus&bookurl=https://www.nid-library.com/Home/ViewBook/220/3/view&link=https://en.wikipedia.org/wiki/Christopher_Columbus&annoperpage=1
```

or

```
https://www.nid-library.com:8080/annotation/createinbulk?key=XXXXXXXX&maskingtext=an%20Italian%20explorer&keywords=Christopher%20Columbus&bookurl=https://www.nid-library.com/Home/ViewBook/220/3/view&link=https://en.wikipedia.org/wiki/Christopher_Columbus&annoperpage=1
```

The result will be an API response letting you know that annotations added on the given page.

## A.I Features Menu

The A.I Features menu includes links to Indexing and OCR, Table of Contents, Object detection and Topic Detection functions. They are used by the library administrators to add value to the library contents.

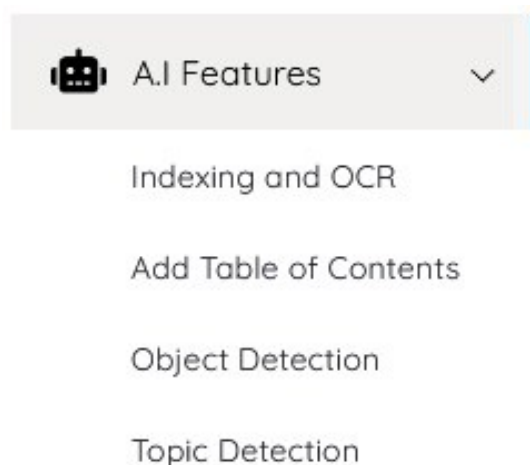


Figure 14: A.I Features functions sub-menu


**Indexing and OCR** When a document is added to the NID library, the system creates a search index using the Tesseract OCR language model. This helps identify text in image based documents. By default the system is loaded with English, German and a few other language models. An administrator can easily enhance the system’s capability by adding more compatible OCR language models (Tesseract 4.0 supports approx. 122 languages). In case the created search index is not working properly, OCR and indexing process can be re-applied using the “Indexing and OCR” link in A.I Features menu.

The screenshot shows a web form titled "Indexing and OCR" with a header bar containing an information icon and the text "\* Indicates required fields." Below the header, the form contains several sections:

- Book \***: A dropdown menu with the placeholder text "---Please select book---". A callout box explains: "One must select a document to apply OCR from a drop-down list. Typing few letters/words of document title can help narrow down the selection process."
- Language \***: A dropdown menu with the placeholder text "---Please select language---". A callout box explains: "For application of OCR please select the appropriate language model".
- Book Pages**: A text input field. A callout box explains: "User can choose the pages (one or more) if re-indexing of selected/limited pages is required".
- Link Detection?**: A checkbox that is checked. A callout box explains: "Selection of this checkbox facilitates detection of hyperlinks in a pdf document and automatically add them as NID viewer annotations."
- Apply OCR?**: A checkbox that is checked. A callout box explains: "In case only link detection is required, user must uncheck the 'Apply OCR' box and only process for link detection".
- Gray Scale?**: An unchecked checkbox. A callout box explains: "The application of grey scale conversion, brightness and contrast settings help improve image quality for accurate OCR application. The original image available to users remains unchanged."
- Brightness**: Radio buttons for "Default" (selected), "25%", and "50%".
- Contrast**: Radio buttons for "Default" (selected), "25%", and "50%".

At the bottom of the form, there are two buttons: "Cancel" (orange) and "Apply OCR" (blue).

Figure 15: Indexing and OCR application form

**Add Table of Contents** link in the menu provides the facility of generating “Table of contents” for the books in the system. The table of contents of a NID document is represented by  in the NID document viewer. In order to add ToC, user must select a document and choose one of the four methods to create/edit table of contents.

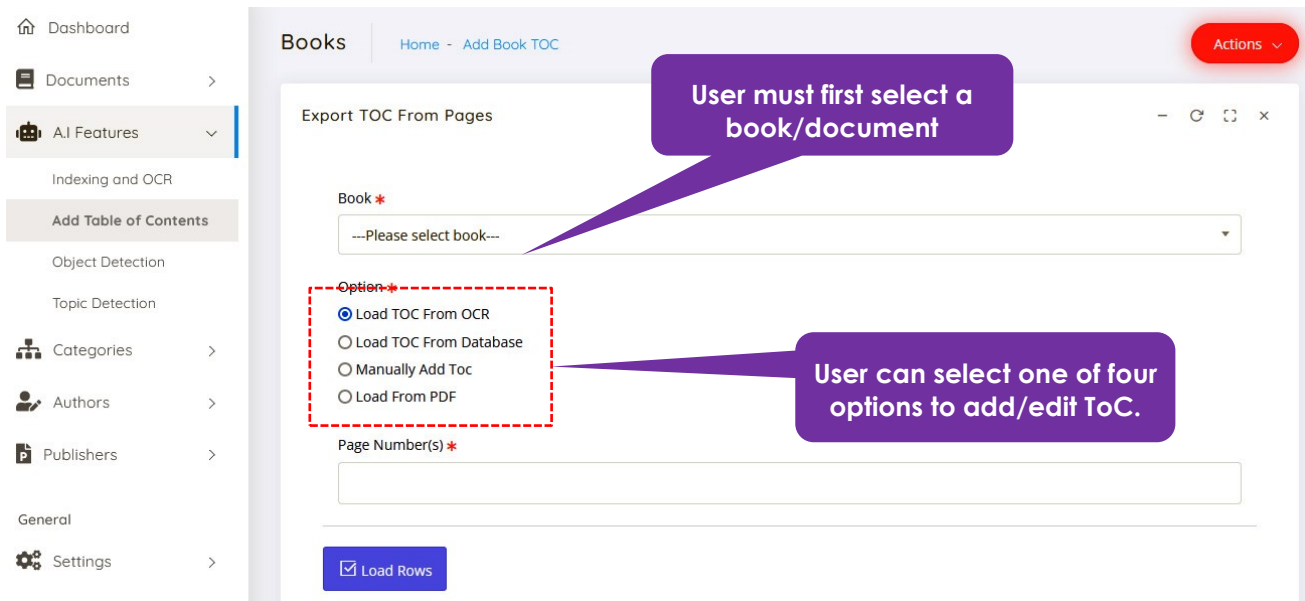


Figure 16: Table of Contents creation screen

The first semi automated approach to create new TOC record is the use of **“Load TOC from OCR”** option. This is least accurate option and should only be used if the document has image based index text. After selecting a book and selection of option to load index entries using Lucene OCR data, user must specify the pages of book containing the table of contents in document. NID system will parse contents of selected pages for indexing information. The system will process the selected pages, populate the system index table and present results to the user for further corrections and saving in the system. In case a document already has a ToC and there is need to update/edit existing ToC, user can select **“Load TOC From Database”** option. After selecting the document and this option, load available data using **“Load Rows”** button. If table of contents exists, the TOC list table will be populated with the record. The user can use up and down Blue buttons for each entry to change its display position. The content and page number text boxes can be edited for necessary updates. The Red delete button removes any existing record entry. User can use the Green + sign button to add a new record entry in table. After making necessary corrections/updates, user must click **“Add Book ToC”** button at the bottom of list to update record in database.

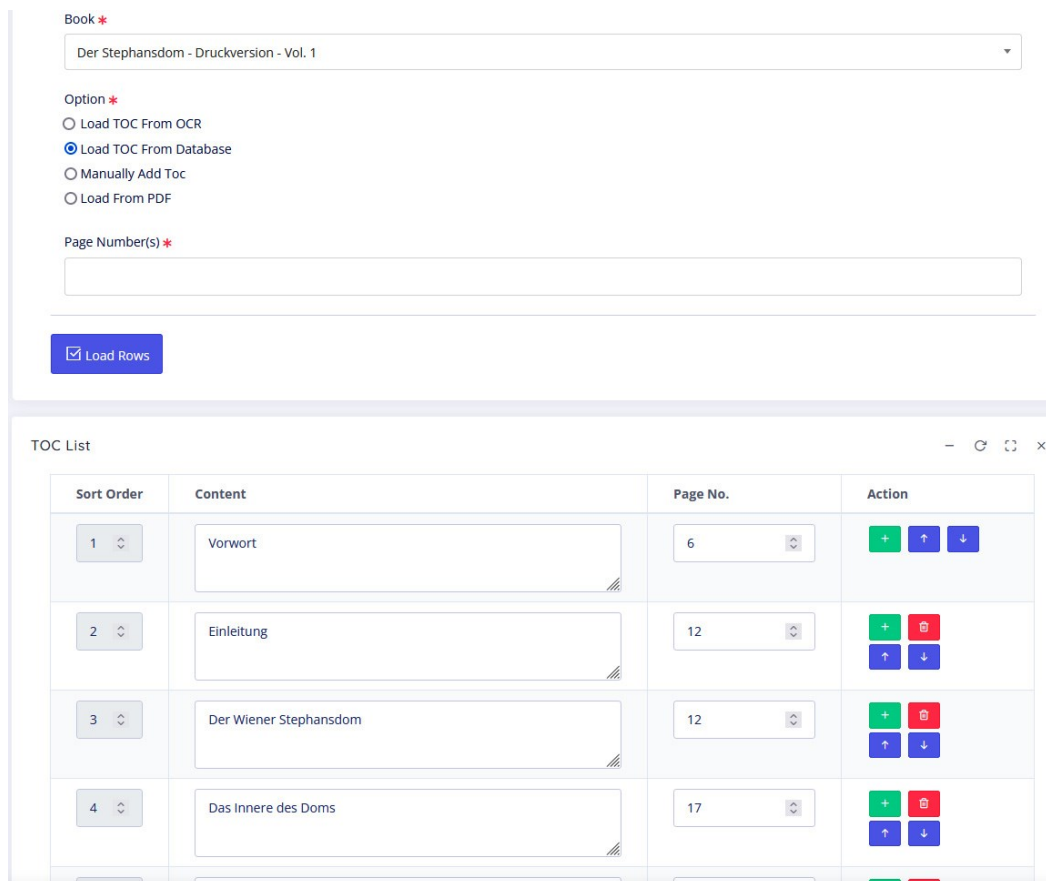


Figure 17: Editing existing table of contents data

In case of no table of contents information in pdf document or index is given in a complex formatted manner, user can select **“Manually Add TOC”** option. The user after selecting the document and option’s radio button must press **“Load Rows”** in order to manually enter title and page number record of the index. User can add more rows using the Green + button and after manually entering TOC record, the **“Add Book ToC”** button saves the record in database. Most suitable method for TOC creation for text based PDF documents is the use of **“Load from PDF”** option. Here after selection of document, user must select page(s) to process and populate the table of contents entries in the list. These pages are the ones that contains the index titles and page numbers. After editing/verifying the loaded record user can click **“Add Book ToC”** to save the record.



Scan/Click to view NID document's Table of Contents creation demo video on YouTube

The **Object Detection** link can be used (optional) to automatically detect and mark image objects in a book.

Figure 18: Object Detection form

It is important to note that after object detection re-indexing of documents is required. It is necessary in order to supplement the book search with detected objects. Users may choose to ignore this step in case the image detection is not required. The object detection and search index supplementing feature in NID make use of You-Only-Look-Once (YOLO)\* algorithm with COCO dataset\*\* to recognize and tag 80 object types in images of NID library system.

\* <https://pjreddie.com/darknet/yolo/>

\*\* <https://cocodataset.org/#home>



Scan/Click to view Search index enhancement in NID document using the Object detection function (Demo video on YouTube)

**Topic Detection** is another optional feature that processes documents for value addition. It is based on NLP algorithms and predefined language knowledge models. The capability is used to process text contents of a book for detection of important topic terms at complete document and page levels. Furthermore, detected topic models at page level and book level are used to

find similar book pages within the book and in other books of the library. In books processed using Topic Detection, the book viewers can see the topic terms and similar links by clicking on the “Topics” icon under the A.I. menu

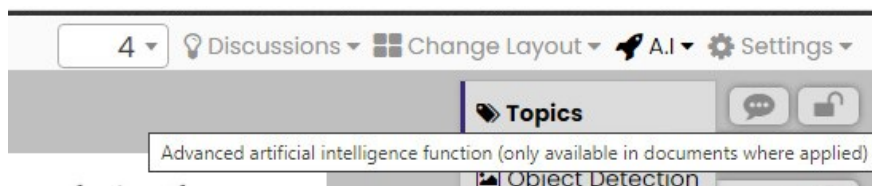


Figure 19: Topics and similar links in NID viewer

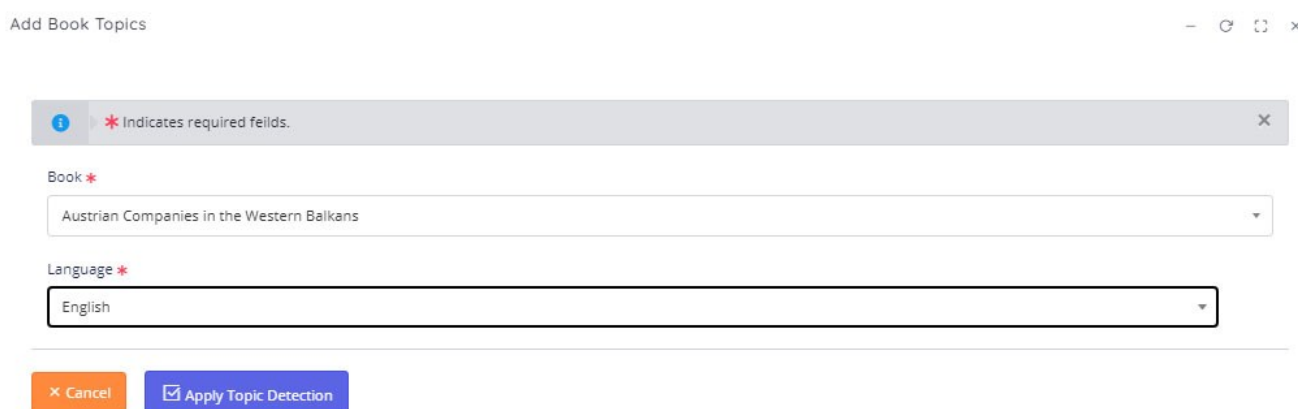


Figure 20: Topic detection function

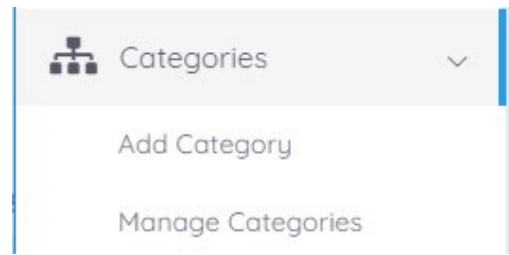
Open source and limited English and German language knowledge models are made part of the current NID distribution package.

The Topics and Object detection/search features are only available for documents that are processed exclusively for the purpose. Application of this feature also makes the “Page Text” icon visible in the document viewer.



## Categories Menu

The Categories menu includes a link to **Add Category**. Administrator user can specify the “Category Name”, its “Description”, associated “Keywords” and upload a cover image for the new category.



While adding a new category if a user selects “Parent Category” value from the drop-down list, it will make the category being added as a sub-category of the parent category.

It is also worth mentioning that on the main library page only top-level categories are displayed. Sub-category information is available in book listings and search pages. The user can make use of sub category selection filters when searching and browsing the books.

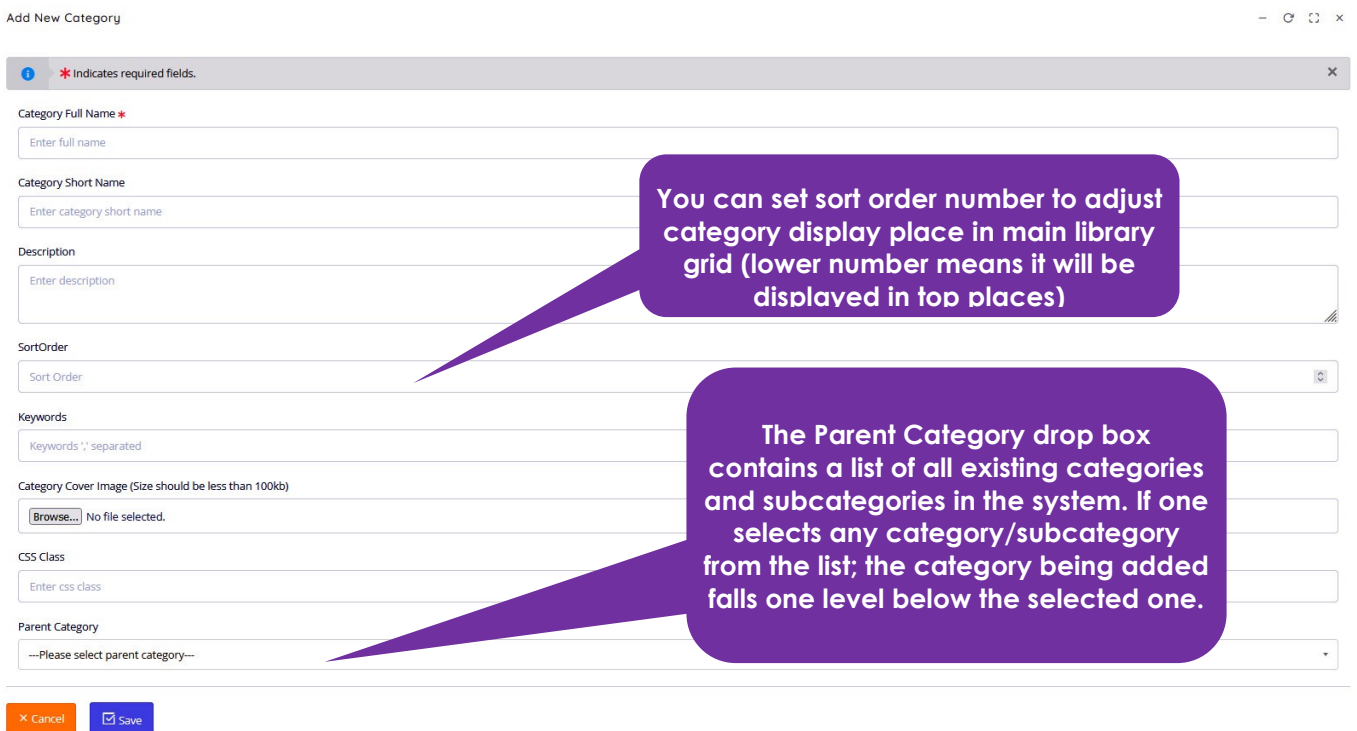
A screenshot of a web form titled 'Add New Category'. The form has several input fields: 'Category Full Name' (required), 'Category Short Name', 'Description', 'SortOrder' (Sort Order), 'Keywords' (separated by commas), 'Category Cover Image' (with a 'Browse...' button), 'CSS Class', and 'Parent Category' (a dropdown menu). At the bottom, there are 'Cancel' and 'Save' buttons. Two purple callout boxes are overlaid on the form. The first callout points to the 'SortOrder' field and contains the text: 'You can set sort order number to adjust category display place in main library grid (lower number means it will be displayed in top places)'. The second callout points to the 'Parent Category' dropdown and contains the text: 'The Parent Category drop box contains a list of all existing categories and subcategories in the system. If one selects any category/subcategory from the list; the category being added falls one level below the selected one.'

Figure 21: Adding a new NID Library category

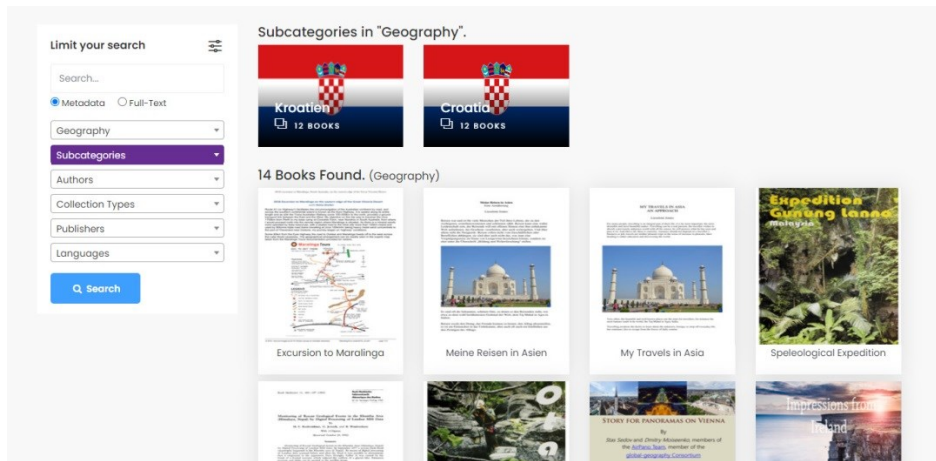
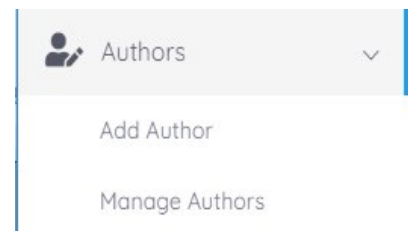


Figure 22: Sub category display in main library

The **Manage Categories** link is used to edit details of existing book categories. A user can change the display images of existing main categories. The category can be made active or it can be disabled for hiding the display in library.

## Authors Menu

It has a link to **Add Author**, where the entry form allows saving author's contact details, adding biography and picture. This information is made available to a book viewer on the associated book detail page. The **Manage Authors** link allows editing of existing authors record. It is often needed because while adding a book, author record is added quickly without entering the desired contact information.



Add Author - ☰ ✕

i \* Indicates required fields. ✕

**First Name \***

**Last Name \***

**Full Name \***

**Email**

**Phone**

**Country \***

**City/State**

**Address**

**Biography/Website**

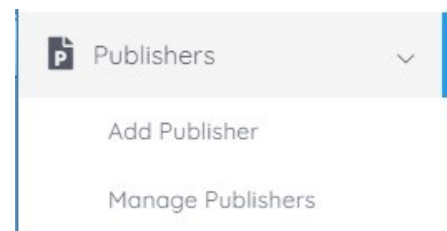
**Author Picture**

✕ Cancel
☑ Save

Figure 23: Adding new author data screen

## Publishers Menu

In this menu section **Add Publisher** link is used to create a new publisher entry. This data is made available as selectable field while adding a new book to the library. The **Manage**



**Publishers** link allows editing of existing publisher record. The feature is used often because quick publisher record addition while adding a book is missing details of publisher record.

Add Publisher

Indicates required fields.

**Publisher Name \***  
Enter publisher name

**Email**  
Enter email

**Website Url**  
Enter website Url

**Address**  
Enter publisher address

**Country \***  
---Please select publisher country---

Cancel Save

Figure 24: Adding a new publisher in NID Library

## Settings Menu

The settings menu group allows library administrators to set different system function parameters. They include the messaging channels, content types and acquisition sources. The function menu also allows the addition of content license types which in turn helps in the access management process. Language data for the OCR engine is also managed through the settings menu links.

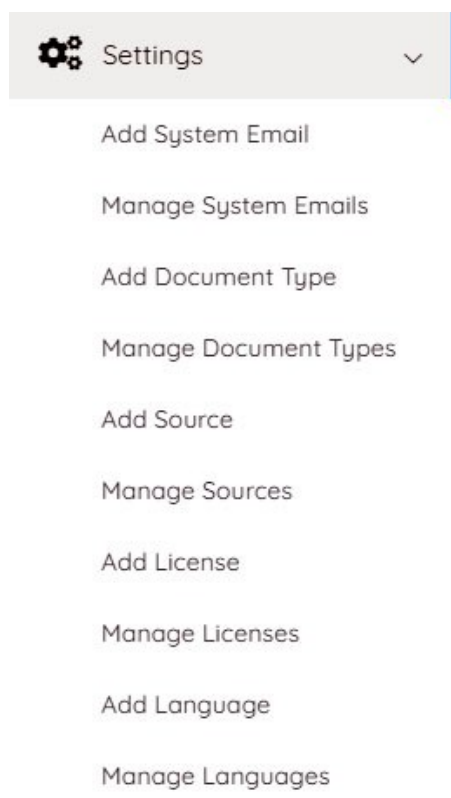


Figure 25: Settings sub-menu

The settings menu can be used to add email account information. This data is used to send and receive different types of notification emails. Using the **Add System Email**, administrator can add email account for sending password reset emails, account activation emails, received feedback emails, group notification emails and also set an email used by library managers to receive feedback messages. The administrator user must enter the server address, port and password in order to use the messaging gateway. The feedback receiving email address can be added without the specification of server address and authentication credentials.

Add System Email

\* Indicates required feilds.

Email Type \*

---Please select system email type---

Email \*

Enter email

Password

Enter password

Host

e.g smtp.gmail.com

Port

e.g 587






Cancel Save

Figure 26: Adding system email account in NID library

The **Manage System Emails** link is used to edit existing email account data. The link screen will display a table consisting of existing records. Users can make the record active/inactive, delete or edit the information available in each email record.

Show  entries

Search:

S# ↑↓	Email ↑↓	Type ↑↓	Host ↑↓	Port ↑↓	Is Active ↑↓	Actions ↑↓
1	[REDACTED]	Password Reset	smtp.gmail.com	587	<input checked="" type="checkbox"/>	
2	[REDACTED]	Account Activation	smtp.gmail.com	587	<input checked="" type="checkbox"/>	
3	[REDACTED]	Feedback From	smtp.gmail.com	587	<input checked="" type="checkbox"/>	
4	[REDACTED]	Feedback To	nohost	0	<input checked="" type="checkbox"/>	
5	[REDACTED]	Groups	smtp.gmail.com	587	<input checked="" type="checkbox"/>	

Showing 1 to 5 of 5 entries

Previous **1** Next

Figure 27: Managing existing email accounts in NID library

The system settings menu allows addition and editing of content types being added to the system. This is done using the **Add Document Type** and **Manage Document Types** links. This feature helps in organization and filtering of content based on type of document e.g., book, guide, journal, biography etc.

Settings also include **Add Source** and **Manage Sources** links. They are used to add and edit information about acquisition sources of library content.

Similarly **Add License** and **Manage Licenses** links are used to add and edit information related to content license i.e., Public Domain, Creative Common, and Copyright etc.

The NID library comes with some predefined license types. They determine the user access rights when associated with a particular book. Library administrator can also set a concurrent user number of a specific license type. The concurrent user setting limits the online access to a book according to the set number of simultaneous viewing users. Once a concurrent user limit is reached, any new user trying to open the book in main library portal will be notified about resource being occupied. The system also advises to access book at a later time. This is useful when libraries have purchased a fixed number of physical books and want to set digital access mechanism for available copies.

i \* Indicates required feilds. ✕

License Full Name \*

License Short Name

Authority

Concurrent Users



---

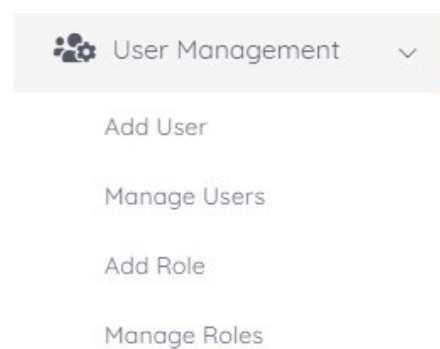
✕ Cancel
☑ Save

Figure 28: Content license management in NID library

The **Add Language** and **Manage Languages** links allow library administrators to add and edit languages data. The language management comes with an option to upload Language data for OCR processing. The default NID installation includes language training data of English, German (also old Latin/Fraktur category) and few other popular languages. The system use example section contains further information on how to locate and add new language capability to the built-in OCR engine.

## User Management Menu

User management console allows addition of user accounts and assignment of advance roles. Self-registration of standard user accounts is made part of NID library portal. The group management feature is also made available in NID library Portal's **console** section: Here, non-administrator users who are made group admins can perform group related functions. Users can also be made to allow account updates in the library portal where they can update profile information. It includes uploading of a user display picture, password change and display name. The



profile information management by the user is made part of NID User manual with further details.

Add New User - ☰ ✕

\* Indicates required fields. ✕

**First Name \***

**Last Name \***

**Full Name \***

**Email \***

**User Name \***

**Password \***

**Role \***

✕ Cancel ✔ Save

---

Manage Users - ☰ ✕

Show  entries Search:

S#	Full Name	User Name	Role	Last Login	Is Closed	Is Active	Actions
1	wajid ali	wajid	Editor	2020-Jan-02 12:03:01	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<span style="background-color: #007bff; color: white; padding: 2px 5px;">⚙️</span>
2	Aqib Malik	aqib	PaidUser	2019-Nov-23 11:26:46	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<span style="background-color: #007bff; color: white; padding: 2px 5px;">⚙️</span>
3	Aqib Malik	admin	Admin	2020-Sep-27 04:32:40	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<span style="background-color: #007bff; color: white; padding: 2px 5px;">⚙️</span>
4	Bilal Zaka	bilal	Admin	2020-Sep-27 08:29:30	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<span style="background-color: #007bff; color: white; padding: 2px 5px;">⚙️</span>
5	Hermann Mauser	hmauser	Admin	2020-Sep-24 12:41:28	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<span style="background-color: #007bff; color: white; padding: 2px 5px;">⚙️</span>
6	B Zaka	bilal@gmail	UnPaidUser	2020-Feb-10 04:51:25	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<span style="background-color: #007bff; color: white; padding: 2px 5px;">⚙️</span>
7	Namik Deltovic	namik	Admin	2020-Sep-24 10:37:44	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<span style="background-color: #007bff; color: white; padding: 2px 5px;">⚙️</span>
8	Manso Ruffo	manso	Admin	2020-Sep-25 03:28:39	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<span style="background-color: #007bff; color: white; padding: 2px 5px;">⚙️</span>
9	Karl Langer	langer	Admin	2019-Oct-11 01:22:01	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<span style="background-color: #007bff; color: white; padding: 2px 5px;">⚙️</span>
10	library test user	librarytest@gmail.com	UnPaidUser	2019-Nov-01 11:32:29	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<span style="background-color: #007bff; color: white; padding: 2px 5px;">⚙️</span>

Showing 1 to 10 of 559 entries 
Previous
1
2
3
4
5
...
56
Next

Figure 29: NID user addition and management screens



# System use examples

This section highlights steps needed to perform important tasks in NID.

## Adding a New Document **Step-1**

**Add New Book**

**\* Indicates required fields.**

**Title \***  
Enter title

**Sub Title**  
Enter sub title

**ISBN**  
Enter ISBN

**Volume No. \***  
Enter volume no.

**Book/Document Type \***  
---Please select publication type---

**Author(s)/Editor(s) \***  
+  
Enter author(s) and editor(s) names

**Category \***  
---Please select category---

**Publication Date \***  
mm / dd / yyyy

**Publishing House/Publishers \***  
+  
---Please select---

**Country \***  
Austria

**Source \***  
+  
IICM, TU, Graz - IICM

**Language \***  
---Please select---

**License \***  
---Please select license---

**Manager Emails (for notification emails)**  
emails ',' separated

**Moderator Email (enables annotation moderation)**  
emails ',' separated

**Keywords**  
Keywords ',' separated

**File \***  
Browse... No file selected.

**Image Density \***  
200 dpi

**Priority \***  
2

**Image Type \***  
JPG

**Book DRM \***  
Level-0

**Cancel** **Save**

**Callout 1:** Add New Book Title and Sub title. Fields marked with (\*) are mandatory

**Callout 2:** Assign a numeric value to book volume, Select or Quick Add using (+) button the values in Author, Publisher and Source fields

**Callout 3:** Select book category from available category list. The list data for field value appears when the field is selected/clicked in case of category, country, language, document type, license etc.

**Callout 4:** Selection of language is necessary for proper indexing. Specify manager and moderator email to receive notifications and enable annotation moderation for the document being added.

**Callout 5:** License types with user limits defined can be selected to restrict concurrent user access. A public Domain License selection makes the PDF source available for download

**Callout 6:** Click here and select the local PDF book source file for uploading into the NID library

**Callout 7:** Select the Image density for book image processing, higher value will yield better image quality and higher file size (Default is 200 dpi)

**Callout 8:** Select the Digital Rights Management (DRM) level of book being added, Level 0 is available to all users of system while higher values restrict access to privileged users

Figure 30: Adding a document example

A user must fill in all necessary fields for adding a new book to the system. After selection of the local file for uploading into the system, the “Save” button is pressed. It initiates the transfer of file, processing of book contents, and storage of record in database.

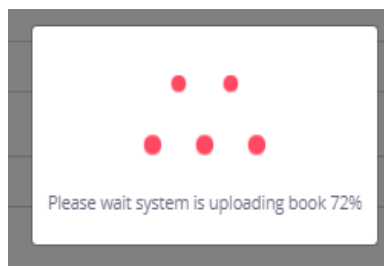


Figure 31: Progress Box of Book Upload in NID

Upon pressing the save button, the system verifies input data and informs the user about mandatory missing information, if any. Otherwise, the system will display a progress box (as shown in figure 31) along with upload and processing statistics. Please note that larger files may take a while to upload depending on the internet connection.

Once the upload is complete the progress box will display a message about starting image processing and indexing in background. Subsequently the system will inform the user about completion of document addition task.

## Step-2

Once the document is added to the system the next step is to verify its proper upload into the system and to confirm that all processing tasks are complete. In order to review an added document, click on the link **Manage Documents** available in left side Document menu.

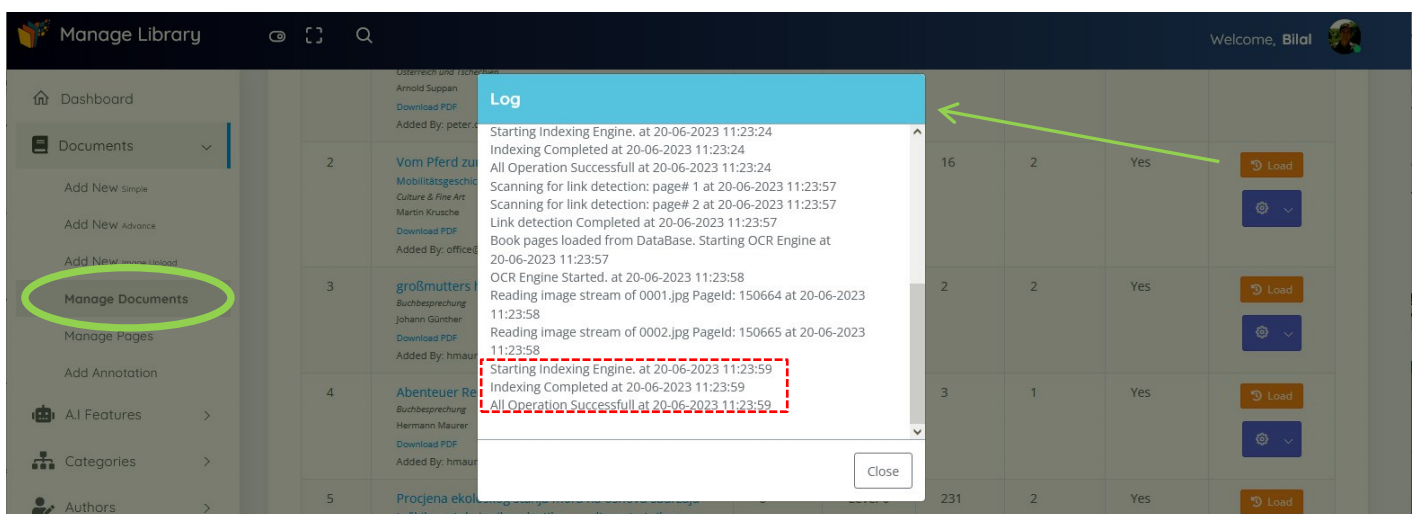


Figure 32: NID Mange Documents screen

As shown in figure 32;

- ✓ The recently added document will appear on top of the available document list
- ✓ The “Yes” shown under “**Indexed**” column will show that the indexing and image processing is complete. “No” means some tasks are pending or encountered some problems.
- ✓ The respective “**Load**” button in “**Actions/Log**” column will show the information related to processing being done on a document.
- ✓ Under the “Action/Log” column links are available to **Edit** the document Data or **Delete** a particular document.
- ✓ Please note that editor accounts will have access to edit/delete functions of documents under their assigned categories.

Once processing is complete a user can proceed to the next steps. They include re-creation of Search Index, detection of links in PDF or other advance indexing features, and Table of Contents creation etc.

*Before proceeding to any of the next processing steps it is important to wait for the system to complete document upload and conversion process. From the documents list presented, click the **Load log** button of respective book to verify that a “Conversion successful” message exists in log.*

### **Step-3-** (Optional / Additional Processing)

In case the document added contains image objects that are required to be tagged/search enabled. One can use the feature of “**Object Detection**” under “A.I Features” menu. This can be done by selecting the document from list and simply pressing the “Apply Object Detection” Button in respective screen. Depending on number of pages the process may take few minutes to complete. The completion of task can be verified by checking the “Log” under “Manage Documents” as described earlier.

Once the Object Detection task is complete, User must Re-apply “**Indexing and OCR**” to supplement the full text search database with newly detected image objects. Re- doing the “**Indexing and OCR**” will also add automatic annotations for the available hyperlinks in PDF document.

User can also apply “**Topic Detection**” at this stage to make available full text for each document page in NID viewer and provide users with similar links and key terms.

## Step-4 (Optional / Additional Processing)

For more organized content presentation, the next step in the document addition process is the creation of Table of Contents. The operation is performed using the link “**Add Table of Contents**” available in the “A.I Features” menu.

Select the Book for Adding new table of contents. Typing few name letters will filter out results from presented drop down list of books in the library

In case you are editing existing Table of Contents please select the option “Load TOC from Database” In case of new TOC addition select one of the other Options i.e., “Load TOC from OCR” “Manually Add ToC” or “Load from PDF”

Select the number of pages that contains index or content table (or some related text)

Figure 33: Table of Contents (ToC) Addition in NID

In order to work with Table of Contents, the system gives four options to its users:

**Load ToC from OCR:** In case a PDF document based on scan images (no extractable text) user can select to use NID’s built-in OCR to read any book pages that may contain table of content entries. Under this option after selection of book, user is required to select book pages that are processed by OCR. When user clicks the “Load Rows” button the ToC list is populated by processed text entries for review/necessary editing and saving.

**Load ToC from Database:** This option is used when a book already has a table of contents. User can select this option and click “Load Rows” button to view exiting table of contents of a book. The ToC list is editable and more entries can be added into the table. In order to save any changes made, user should click “Add Book ToC” button.

**Manually Add ToC:** After selecting a book, when user select the manual TOC addition and click “Load Rows” button, a list of ToC entries appears where user can type description and page number for each ToC row entry. User can

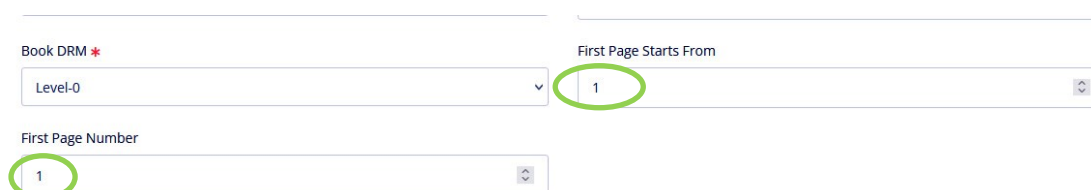
use the “plus” button to add more rows in ToC List. Once the entries are complete user can press “Add Book ToC” button to save the Table of Contents for the book.

**Load From PDF:** For PDF documents/books where text extraction is available this is the preferred approach to jump start ToC creation. User can start the process by selecting the page where existing table of contents is available (or some pages with text contents that may help start the creation of index). After necessary editing/deletion/adjustments, the user may hit the Add TOC button available at the end of form. This creates the new table of contents of a document available to all library users.

### Step-5 (Optional / Additional Processing)

The pages of a document in the NID library can be managed using the link “**Manage Pages**”. The administrator user can change the sorting order of the book pages; disable a book page for better viewing experience. This feature is useful for removing unnecessary blank pages in a source file by clicking on “Delete” link in “Action” button menu. User can also select the “Edit” link in Action button menu to replace the image source file of a particular page.

Another similar feature of adjusting book page number to match the page numbers of digital and physical books is available through “**Manage Documents**” menu. A user must select “**Edit**” mode of a particular book to see book information. At the bottom of presented book data form, user can set First page location in order to match numbering sequence of the physical book.



The image shows a portion of a web form. At the top, there are two input fields. The first is labeled 'Book DRM \*' and contains the text 'Level-0'. The second is labeled 'First Page Starts From' and contains the number '1'. Below these, there is another field labeled 'First Page Number' which also contains the number '1'. The numbers '1' in both the 'First Page Starts From' and 'First Page Number' fields are circled in green.

Figure 34: Page setting to align page numbering of a document

Under the same edit screen, menu type display setting of a document can be specified as well.

#### Menu Type

- Both modes allowed, Default simple mode
- Both modes allowed, Default full mode
- Only simple mode allowed
- Only full mode allowed
- Basic Menu for anonymous users

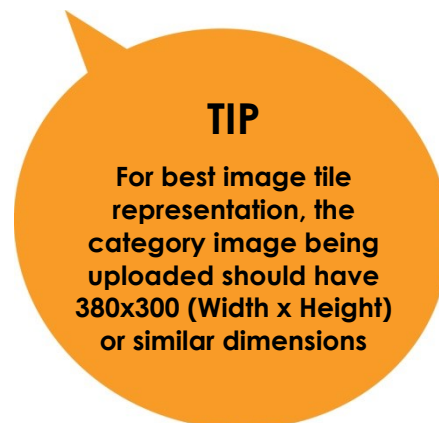
#### Annotation and Discussion Access

- Both modes allowed without login
- Both modes allowed only after login

Figure 35: Viewer display menu settings of a document

## Creating a new book category

Documents in the NID library are organized in categories and sub-categories. Default installation of a NID library has some predefined document categories, i.e., Arts and Humanities, Basic Sciences, Architecture, Geography etc. These categories are presented on main library page as image tiles organized in a grid. Any newly created document is placed inside a pre-defined category.



The management portal allows editing the exiting categories/sub-categories, creation of new or removal of existing categories/sub-categories from the system.

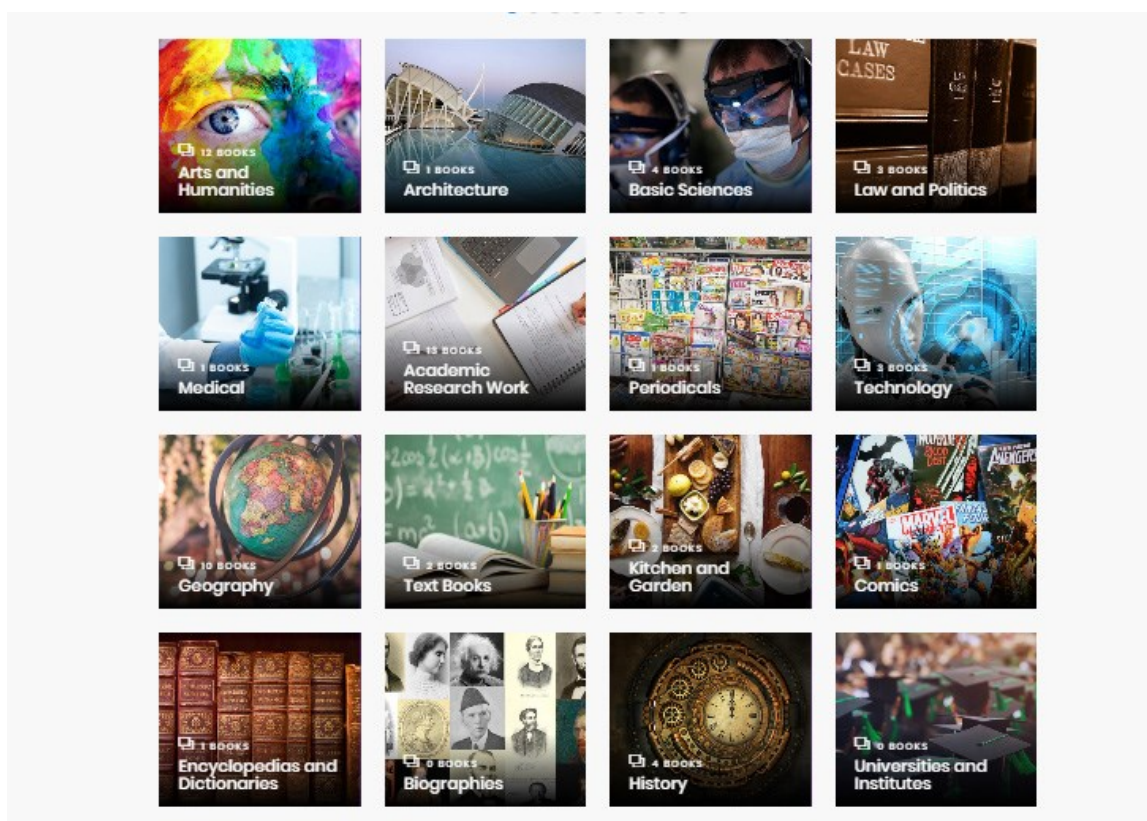


Figure 36: Document category grid in NID library

The administrator/editor user must give the category name and upload a valid image file to represent category in the system. Furthermore, additional information such as category meta data may also be provided.

**\* Indicates required fields.**

**Category Full Name \***

**Category Short Name**

**Description**

**SortOrder**

**Keywords**

**Category Cover Image (Size should be less than 100kb)**  
 No file selected.

**CSS Class**

**Parent Category**

**Callouts:**

- Give a new Category Full and short name. Fields with (\*) are mandatory
- Meta data of category such as description and keywords to facilitate search operations
- Select and upload the image file that will be displayed on category grid tile. It is recommended to use JPG PNG, GIF files of smaller size
- Style information and parent category selection in case of sub-category creation

Figure 37: Creating a new category in NID Library

Users can disable/edit/delete existing system categories by selecting the **Manage categories** link in left side panel.

Dashboard

- Documents
- All Features
- Categories
  - Add Category
  - Manage Categories**
  - Authors
  - Publishers
- General
  - Settings
  - User Management

**Book Categories** Home - Manage Categories Actions

Manage Categories

Show 10 entries Search:

S#	Category Name	Parent Category	Sort Order	Is Active	Added/Managed By	Actions
1	Kunst & Kultur		10	<input checked="" type="checkbox"/>	Hermann Maurer hmaurer	<input checked="" type="checkbox"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>
2	Architektur		2	<input checked="" type="checkbox"/>	Hermann Maurer hmaurer	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
3	Grundwissenschaften		8	<input checked="" type="checkbox"/>	Hermann Maurer hmaurer	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
4	Recht und Politik		13	<input checked="" type="checkbox"/>	Hermann Maurer hmaurer	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
5	Medizin		12	<input checked="" type="checkbox"/>	Hermann Maurer hmaurer	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
6	Akademische Forschung		1	<input checked="" type="checkbox"/>	Hermann Maurer hmaurer	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
7	Zeitschriften		17	<input checked="" type="checkbox"/>	Hermann Maurer hmaurer	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
8	Technik & Digitalisierung		15	<input checked="" type="checkbox"/>	Hermann Maurer hmaurer	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
9	Geographie		6	<input checked="" type="checkbox"/>	Hermann Maurer hmaurer	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Figure 34: Manage Book categories section

It is important to note that category should be empty (no documents assigned) before its deletion. Using the Edit menu Administrators/Editors can also assign categories to any specific editor for management of contents.

## Adding new Language data

NID library OCR engine can be supplemented with updated/additional language training models. The built-in OCR engine is based on a stable and accurate open-source platform. The compatible training language data is available at the following URL

<https://github.com/nidlibrary/ocr-trained-data>

Accessed on February 01, 2021

Besides the already added languages, user can select more than 100 language data files to process books available in different languages.

The screenshot shows the 'Add Language' form in the NID Management portal. The form has the following fields:

- Language Name \***: A text input field with a placeholder 'Enter language name'. A callout box points to this field with the text: 'Specify Language names/short codes, as they should appear in list while applying the OCR function'.
- Language Code \***: A text input field with a placeholder 'Enter language code'.
- Language Native Name**: A text input field with a placeholder 'Enter language native name'.
- Language Trained Data File**: A file selection field with a placeholder 'Choose file' and a 'Browse' button. A callout box points to this field with the text: 'Upload the language training files (can be downloaded from link above)'.

At the bottom of the form, there are two buttons: 'Cancel' (orange) and 'Save' (blue). A red 'Actions' button is visible in the top right corner of the form area.

Figure 35: NID Management portal Settings (Language data) section



## Outlook

NID is now fully functional. However, as desired by some users over time more advanced feature will be added. The future development directions are influenced by introduction of artificial intelligence applications. Use of machine learning algorithms on rich datasets available in a digital library system leads to many interesting use cases.

One such example is image object detection algorithm “You Only Look Once” (YOLO) implementation in NID. This feature is useful in case the book being added contains images that are not described nor have text data for indexing. The library admin can apply automatic image detection algorithm to identify and mark certain image types. This can be done using the link “Object Detection” before the standard indexing process. Indexing done after detection process will include detected images in book search. We are currently using a publicly available 80 object categories dataset for identifying and captioning images in NID. In the future, the NID Team will release domain specific image datasets on demand to meet the specialized image detection requirements e.g. medical images, CAD designs, scientific diagrams etc.

Another example of AI application in NID is “Topic Detection” function. The feature is based on Natural Language Processing algorithms and built-in open-source language knowledge models. This processing step will associate key terms/topics with a book and each of its pages. It also determines the links to similar pages within the book and with other book pages of the library. The language knowledge models mature over time and accuracy of topic detection and similarity links improves with increase of structured data in the library system. Our research team plans to investigate and tweak NLP algorithms and language models for recommender systems in libraries.

Our development team is also actively working to include ChatGPT like custom knowledge chatbot feature to the NID library system. We are working on integration of LangChain Framework and a selected local LLM with NID platform to achieve the objective.

## Support and Information

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