

Appendices

I. Administrator's functionalities as-is

1.1 Data management functionalities

1. The types of objects are as follows:
 - a. Events
 - b. Photos
 - c. Art
 - d. People
 - e. Stories
 - f. Topics
 - g. Books
 - h. Book pages
 - i. Book texts
 - j. Galleries
 - k. Timelines
 - l. Audio
 - m. Video
 - n. Texts
 - o. References
 - p. E-books
2. The objects have relations between them: for example, a book object is mapped to book pages; each event belongs to one timeline and so on.
3. All of the inserted objects must be displayed to the regular user.
4. The administrator must be able to
 - a. Add a new object.
 - b. Edit all of the features (such as name, date, the group that the object belongs to, and all other features that the object has).

- c. Be able to see all of the objects.
- d. Be able to search for a certain object by some of its features.
- e. Delete one or several objects at once.
- f. Group certain objects, e.g. be able to add all event-type objects that take place in Estonia into one group to be displayed in one timeline.
- g. Set the order for some objects in which the objects appear to a regular user of KS.
- h. Create relations between objects, e.g. add a photo to an event.

1.2 Administrative functionalities

- 1. The administrator must be able to insert, update and delete users.
- 2. The administrator must be able to see the existing users.

1.3 Content management

- 1. The administrator must be able to do content management on the site, that is, have the following functionalities:
 - a. Add and delete new pages and subpages
 - b. Insert, update, format and delete content (text, images, video, audio, files) on these pages
 - c. Choose which content is visible to which user groups.
 - d. Add metadata to the content
 - e. Choose which administrative users can access and change which content.

II. Functionalities of a non-administrative user as-is

1.1 General functionality

1. There must be a search function.

1.2 Timeline

1. This page contains a timeline on which events have been inserted. The events belong to different groups of events: currently the groups are European literature and people, Estonian culture and life, Estonian authors, and Kreutzwald's life and creations.
2. The legend for the colour codes for event groups must be shown.
3. Further information about the currently chosen event (one that was most recently clicked on) must be displayed. The sections for this additional information are the following:
 - a. The name of the event
 - b. The event group it belongs to
 - c. A longer description or explanation about the event
 - d. A list of other events that happened in the same year
 - i. Upon clicking to one of these events, the information about the currently chosen event must be replaced by the info about the event which was clicked on.
 - e. The year on which the event took place
 - f. Related material from the rest of the page, e.g. photos or links.
 - i. Upon clicking to one of these materials, information about that material must be shown without taking the user away from the page with the info about the current event, for example a pop-up window can be used.
4. There must be a possibility for the user to go through the events one by one in chronological order.

1.3 Graphical functionality for the timeline

1. The page must display the timeline graphically.
2. There must be year numbers (every 10th year number) visible on the timeline.
3. There user must be able to zoom in and out of the timeline.

4. There must be a possibility to go to the default view of the timeline.
5. The timeline must be scrollable in both directions (“future” and “past”).
6. The year numbers should not end in either direction, i.e. the timelines must be infinitely scrollable.
7. The events must be displayed on the timeline in the form of their short description. If the description is longer than 12 characters, the rest are omitted.
8. Each event group must have its own colour and all the events belonging to that particular group must be displayed in this colour.
9. When the user hovers over an event with their mouse, the full name of the event must be displayed.
10. Upon clicking an event, information about this event must be shown to the user as described in 1.2.3.

1.4 “Kalevipoeg” and Noor-Eesti

These two pages contain the manuscripts for “Kalevipoeg” and works by the literary grouping Noor-Eesti. Although these are realised as two different subpages of the site, their purpose and structure are the same which is why only one set of requirements is described for these two subpages. These two subpages will be referred to as “Kalevipoeg” and “Noor-Eesti”.

1. There must be an introduction to the subject (i.e. text that answers the questions “What is Kalevipoeg?” and “What was Noor-Eesti?”).
2. For “Kalevipoeg”, there must be an overview of the layout of the page, i.e. what can be found on each of its subpages.
3. Both “Kalevipoeg” and “Noor-Eesti” must have subpages for relevant texts. For “Noor-Eesti”, these texts are collections of the grouping’s work; for “Kalevipoeg”, these texts are relevant materials to the tale of “Kalevipoeg”, actual texts of the epic and a link to the “Kalevipoeg” timeline.
 - a. The “Kalevipoeg” timeline is a timeline that has the same functionalities as described for timelines above, but the only events that are displayed are those related to the epic “Kalevipoeg”.
 - b. On each subpage, there must be a link to the e-catalogue Ester for the relevant text.
4. The relevant texts are of two types.

- a. The first type of texts are displayed directly in the subpage as plain text.
 - b. The second type of texts are not displayed directly. They can be accessed in at least one of the following three different ways from the relevant subpage.
 - i. They can be downloaded as an e-book.
 - ii. They can be displayed as plain HTML text on a separate page.
 - iii. They can be displayed as scanned images of the actual text on a separate page.
5. For the texts described in 5.b.ii and 5.b.iii, the following applies:
- a. These texts must be displayed one page at a time.
 - b. The user must be able to move between these pages one by one.
 - c. A table of contents must be displayed for the user, where a list of page numbers is shown. Upon clicking a certain page number, the corresponding page must be displayed.
 - d. The user must be able to exit the viewing process and be redirected back to the subpage.
6. There must be a section on every subpage titled “Related material”, which contains links to relevant objects on the “Collections” subpage.
- a. If there are no related materials to be displayed, the entire section must not be displayed.
 - b. The related materials must be grouped by the object type, e.g. all relevant events must be displayed under the title “Events”, all people under the title “People” and so on.
 - c. After the title of the object type, the amount of this kind of relevant objects within this category must be displayed in brackets.
 - d. Only the first four relevant objects within each category must be displayed. The user must be able to click on a button which displays all of the related objects.
 - e. Upon clicking the object, the user must be redirected to the respective subpage of the “Collections” subpage.

1.5 Collections

- 1. The “Collections” subpage displays different types of objects for the viewer. These objects can be grouped into the following categories:

- a. People
 - b. Events
 - c. Photographs
 - d. Art
 - e. Galleries
 - f. Books
 - g. Articles
 - h. Audio
 - i. Videos
 - j. References
 - k. Critique
 - l. Links
2. The functionalities for the “Collections” subpage are the following:
 - a. There must be an “Introduction” subpage which explains the “Collections” page and what subpages it contains and what one can expect to find from them.
 - b. For all of the aforementioned object categories, there must be a separate subpage that displays every object in the database that belongs to this category.
 - c. These subpages must display a list of the titles of each of its objects. Upon clicking the title, the user must be redirected to a new subpage or a relevant external page which contains all of the information about this specific object and materials related to it.
 - i. The functionalities described in chapter “Kalevipoeg” and Noor-Eesti point 6 must apply to this subpage as well.
 - d. If necessary, each subpage must itself have subpages that divide its objects into further groups. For example, the objects of type “People” are divided into two categories: Estonians and Europeans. The user must be displayed these subcategories as well.
 - e. The user must be able to see all of the objects in a given category at once or be displayed these objects 25 at a time with the latter being the default.
 - i. The user must be able to move between the groups of 25 one by one.
3. For book type objects, the rules outlined in chapters “Kalevipoeg” and Noor-Eesti points 4.b and 5 must apply.

1.6 Introduction

1. This subpage displays all the relevant information about the KS page itself and about the ECHA.
2. The introductions must be displayed in the following five categories:
 - a. Introduction. This subpage displays the general info about the KS, its purpose, the structure of the site and what can be found within it.
 - b. Table of contents. This subpage contains the site map of KS.
 - c. Sponsors. This subpage displays the names and, if relevant, logos of organisations that have helped the KS in any way.
 - d. Staff. This subpage contains of the people who work supply content for KS, what content they are responsible for, the sources of the content, and their contact information.
 - e. Feedback. This subpage consists of a feedback form which allows the user to send messages to the site owners.
 - a. The form must have the following fields:
 - i. Last name
 - ii. First name
 - iii. Phone number
 - iv. Email
 - v. Comments

III. Database model

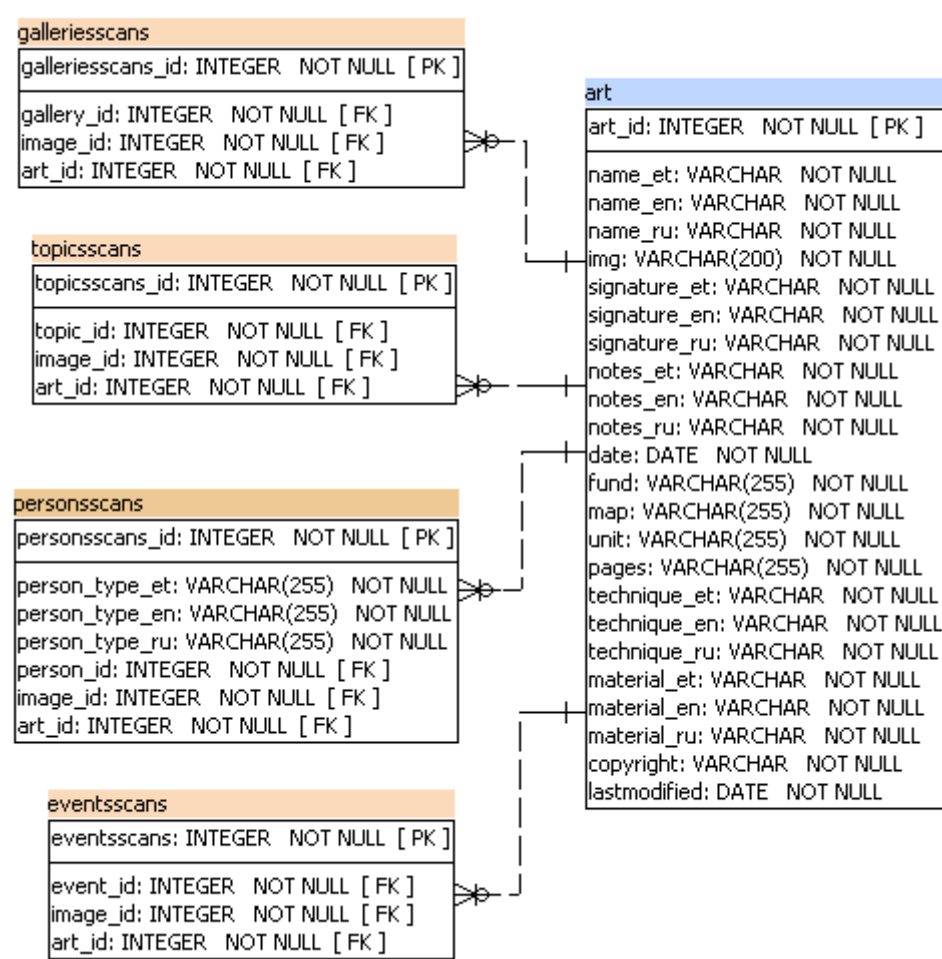


Figure 17. Table *art* and tables related to it.

erm_users	
user_id: INTEGER	NOT NULL [PK]
user_name: VARCHAR(50)	NOT NULL
firstname: VARCHAR(50)	NOT NULL
surname: VARCHAR(50)	NOT NULL
passwd: VARCHAR	NOT NULL

Figure 18. Table *erm_users*.

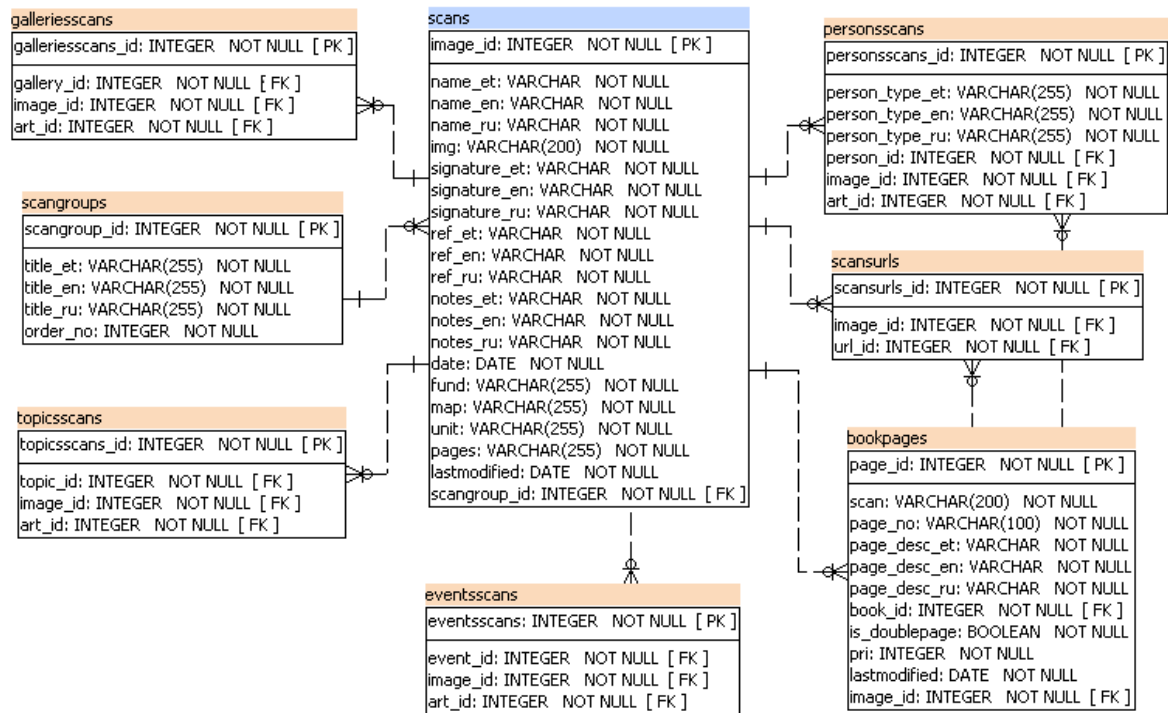


Figure 19. Table *scans* and tables related to it.

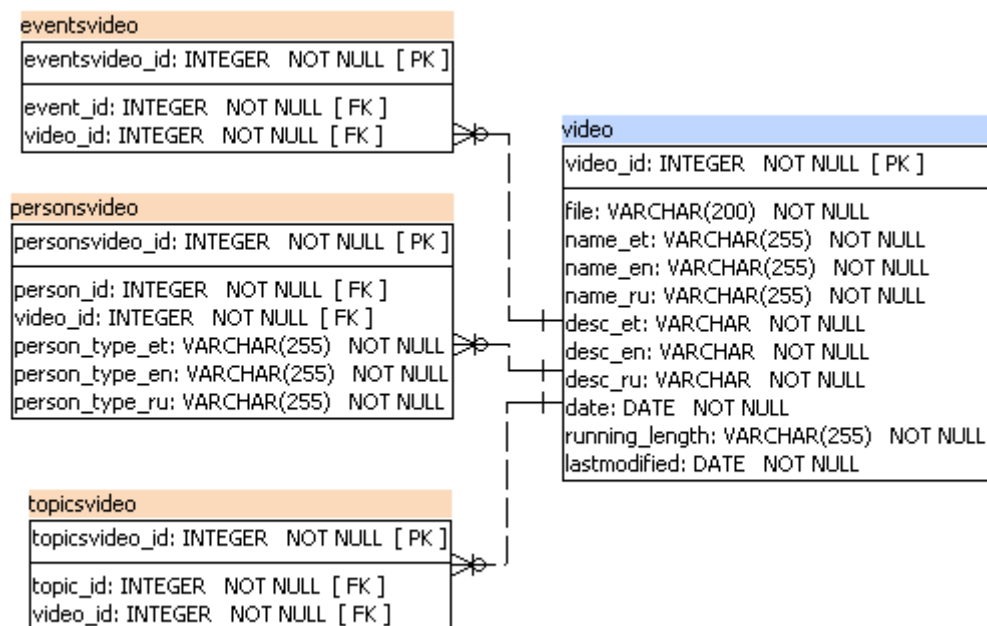


Figure 20. Table *video* and tables related to it.

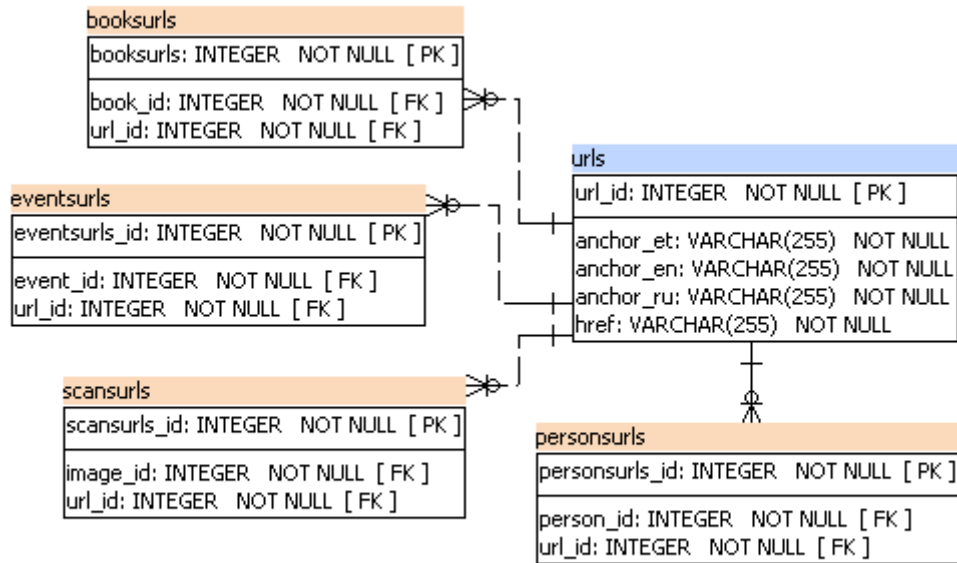


Figure 21. Table *urls* and tables related to it.

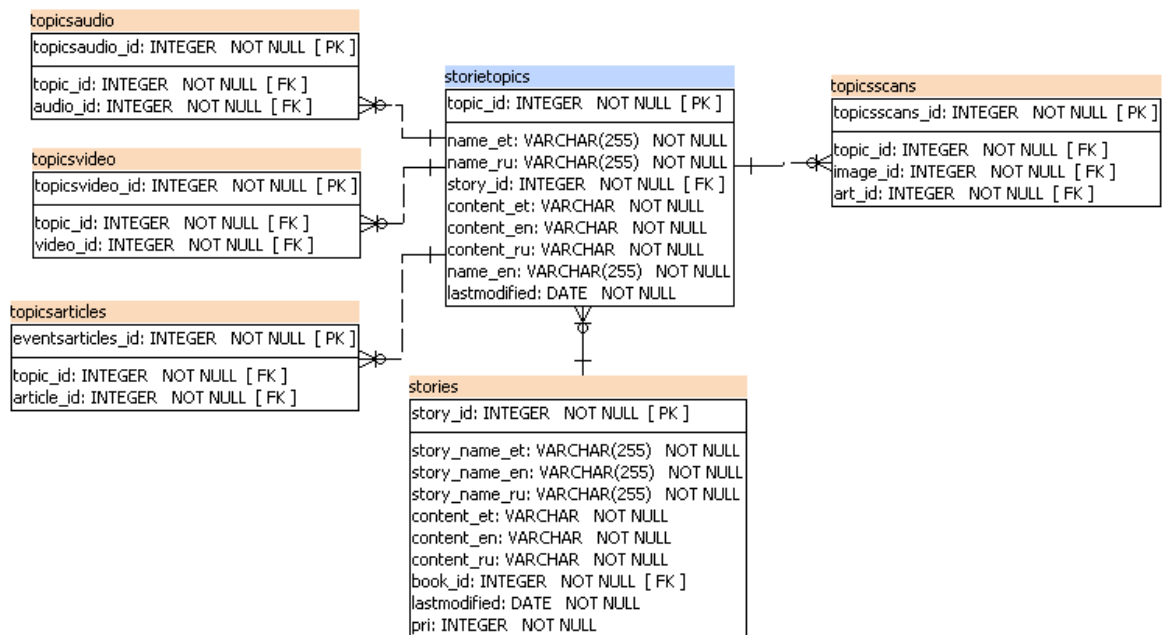


Figure 22. Table *storiетopics* and tables related to it.

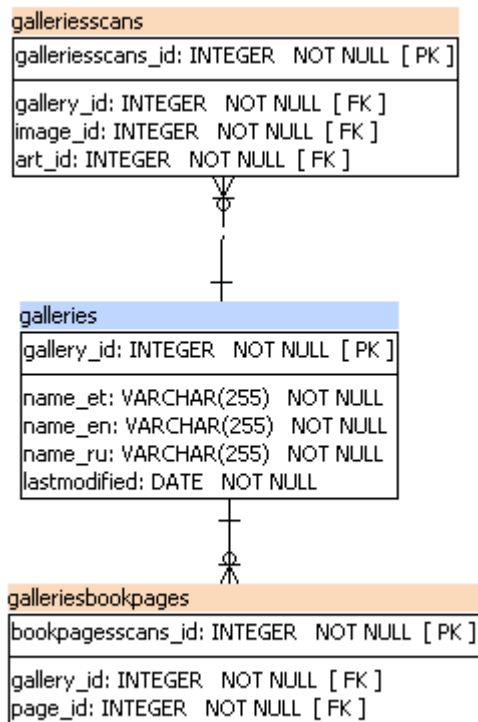


Figure 23 Table *galleries* and tables related to it.

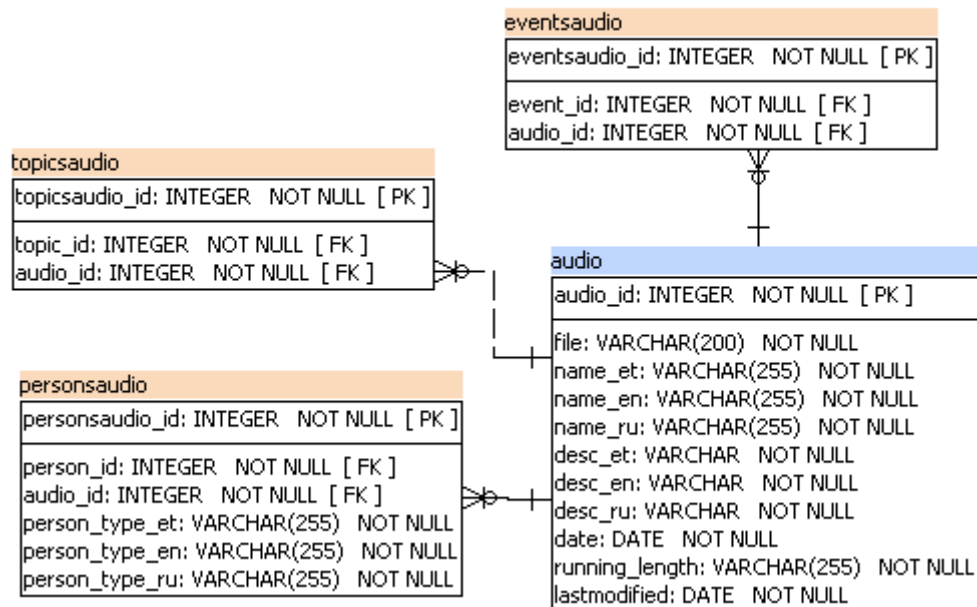


Figure 24. Table *audio* and tables related to it.

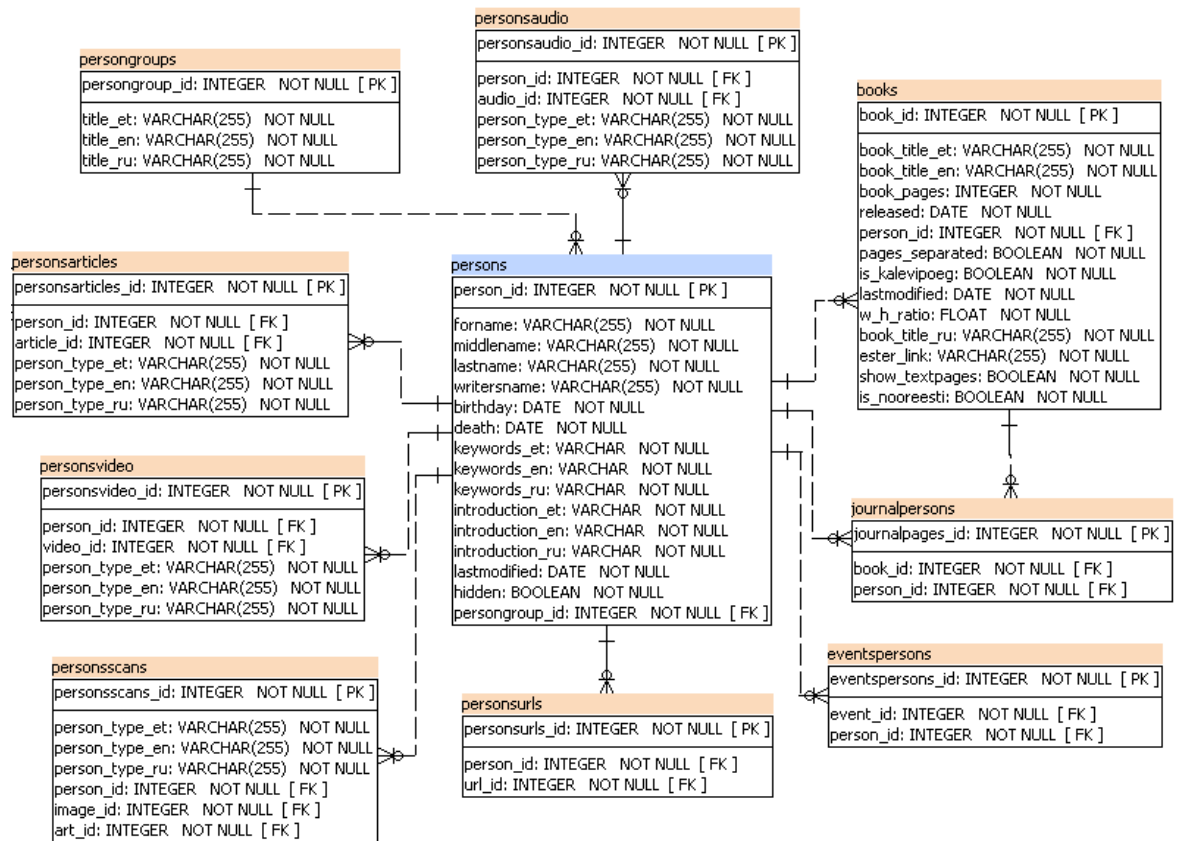


Figure 25. Table *persons* and tables related to it.

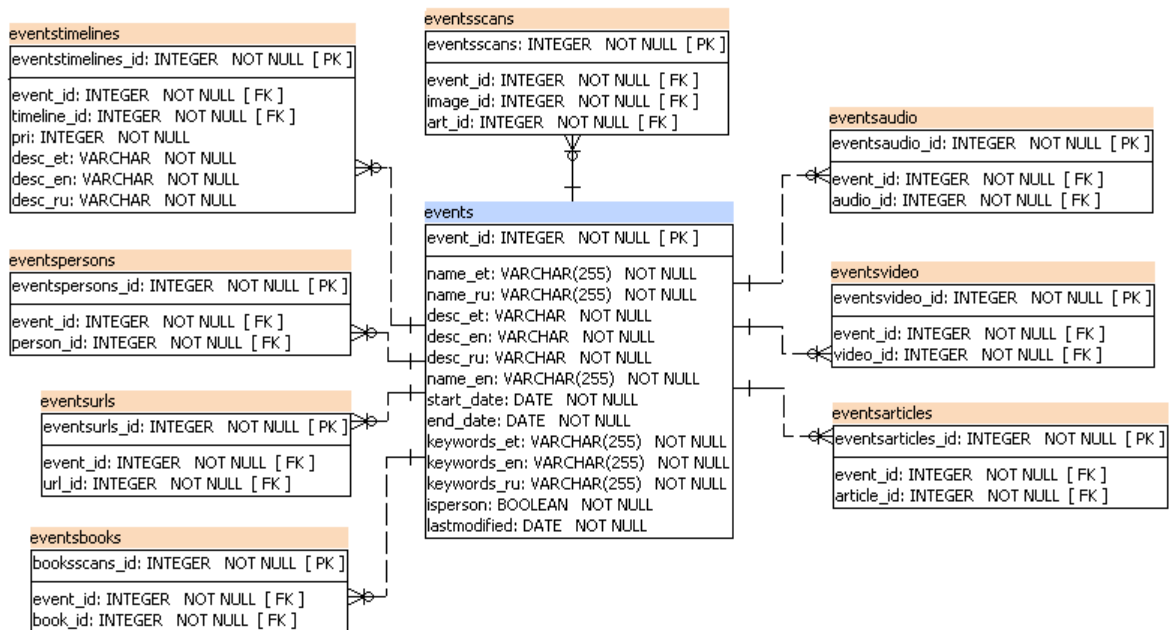


Figure 26. Table *events* and tables related to it.

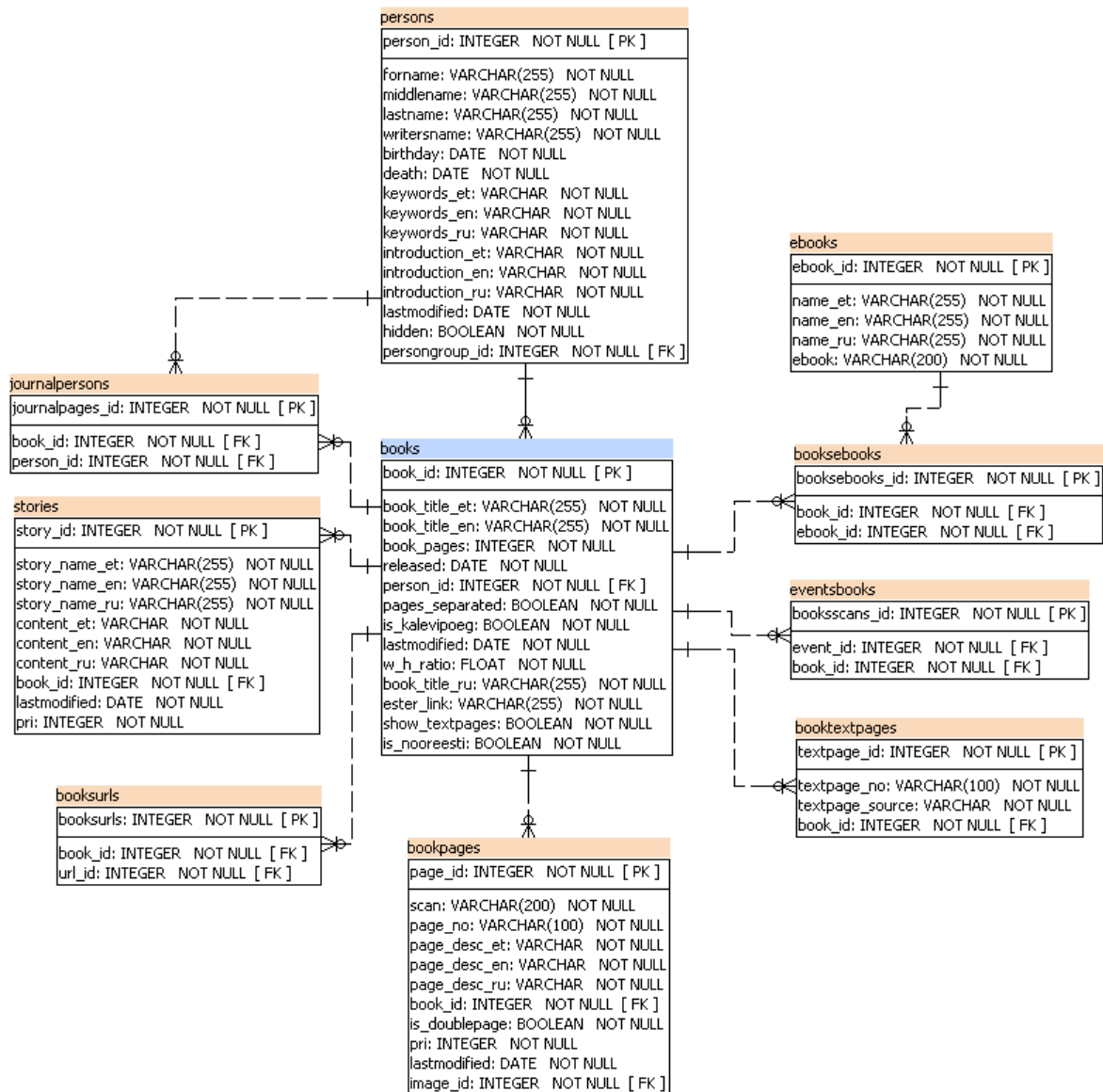


Figure 27. Table *books* and tables related to it.

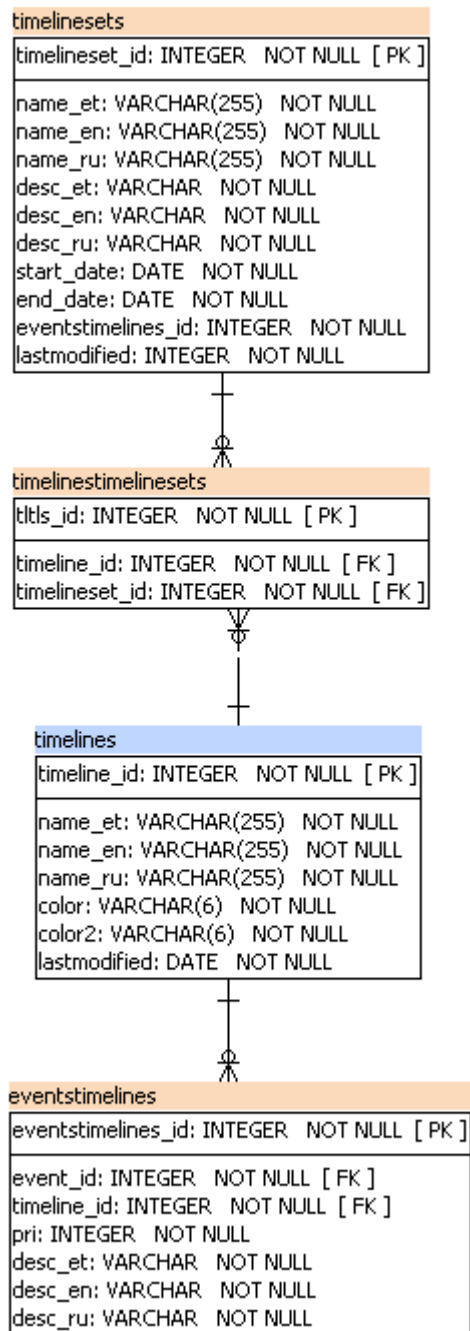


Figure 28. Table *timelines* and tables related or relevant to it.

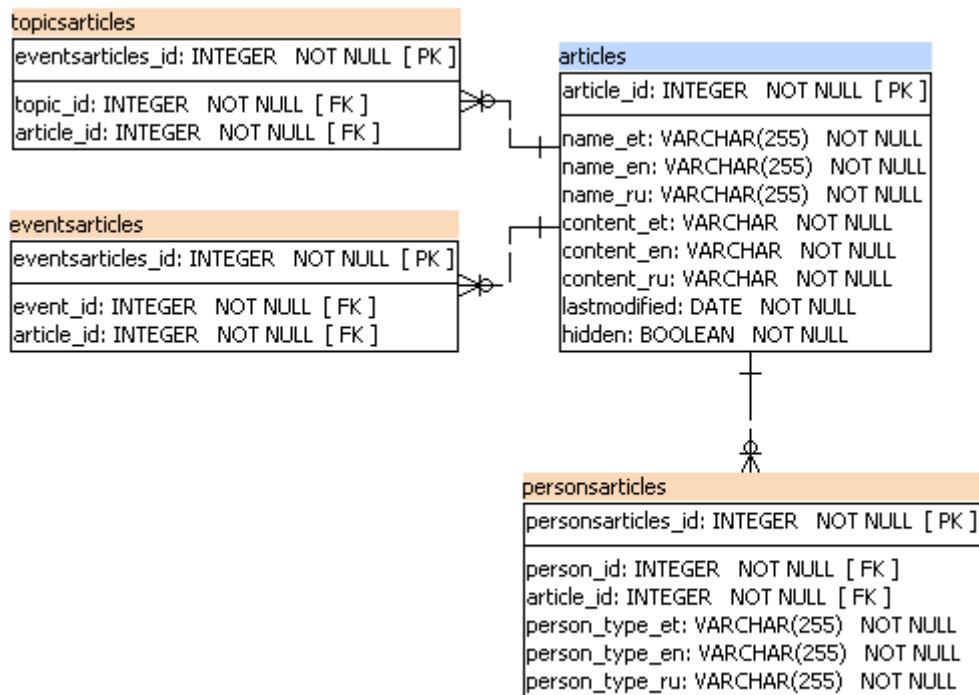


Figure 29. Table *articles* and tables related to it.

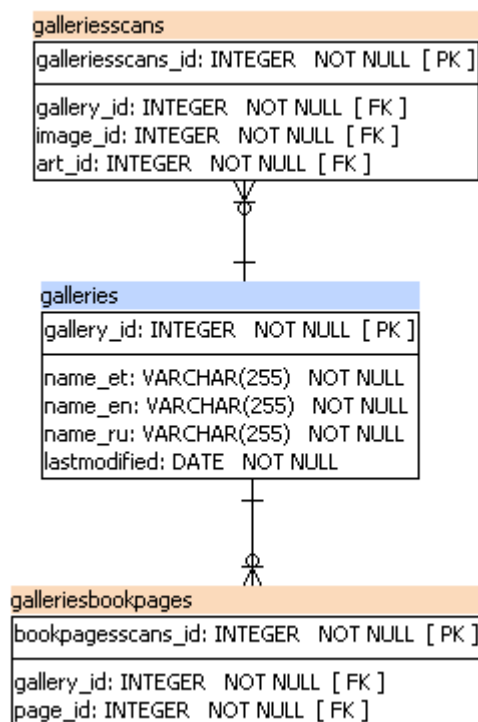


Figure 30. Table *galleries* and tables related to it.

IV. Functionalities of a non-administrative user to-be

1.1 General functionalities

1. The functionalities specified in Appendix II must be available to the non-administrative user.
2. On each object's subpage, the author of this content must be displayed.
 - a. "ECHA administrator" for content created by the administrators.
 - b. Username for content created by logged-in users (see below).

1.2 Functionalities for a logged in user

1. The user must be able to log into and out of KS.
2. The user must be able to bookmark events at the "Timelines" page. This means that there is a quick access menu on the "Timelines" page that displays the events that they have bookmarked and that they are able to navigate to with one click.
 - a. The user must be able to remove events from their bookmark list.
3. The user must be able to create relations between two objects, e.g. connect a person and a book that person has written.
 - a. The user must be able to choose whether this relation is visible to everyone, only themselves or only to people who have the link to the relation.
 - i. Seeing the content on the link does not require the viewer to be logged in.
 - ii. If it is visible to everyone, then non-logged in users must be able to see these relations on the corresponding objects' subpages under "Related materials".
4. The user must be able to create their own instances of objects: e.g. events, people, etc.
 - a. The user must be able to decide whether these objects are visible to everyone, only themselves or only to people who have the link to the object.
 - i. Seeing the content of the link does not require the viewer to be logged in.
 - ii. If they are visible to everyone, they must be displayed to the non-logged in users.

5. When the object requires a file to be uploaded, e.g. a photo, there must be a reasonable size limit applied.
6. The user must be able to create their own timelines.
 - a. The user must be able to name the timeline.
 - b. The user must be able to add events to it and delete them.
 - c. The user must be able to choose whether the timelines are visible to everyone, themselves or to anyone who has the link to the timeline.
7. The user must be able to submit proposals for change of the existing content.
 - a. An administrator must be able to see these changes and approve or reject them.
 - i. If the administrator approves the change, the information is updated.
 - ii. If the administrator rejects the change, the information is not changed.
8. The user must be able to bookmark photos in the same way as described in 3. a).
9. There is a cumulative size limit applied to the content created by each user.

1.3 Timeline

1. Each event on the timeline must have its own URL.
2. There must be a search functionality within this subpage on the events.
3. The user must be able to choose which event groups they wish to view.
4. The duration of events must be indicated on the timeline.

1.4 Collections

1. The user must be able to view up to four photos at once, side by side.
 - a. The user must be able to choose the photos they want to view together.
2. When viewing a photo, there must be buttons that display the next and the previous photo without needing to exit the interface for viewing photos.
3. The user must be able to zoom into and out of a specific place on the photo.
4. The photos that the user viewed during the same session must be marked in a way that helps the user differentiate between photos they have already seen and those they have not.
5. When a photo originates from another source, the source must be displayed to the user, for example as a link.
6. The user must not be able to download the photos.

7. The user must be able to search for specific objects under that object type's subpage:
for example for photos only from the 1950s.
8. The user must be able to view two texts at once in a split-screen mode in order to
compare them.

V. Administrator's functionalities to-be

1. The functionalities presented in Appendix I must be implemented
2. The administrator must be able to create new object types, define its attributes and relations to other object types.
3. Each relation between two object types must have a description.
 - a. For example “written by”, “parody of”, “participates in”, etc.
4. The administrator must be able to add content from other databases via KS.
 - a. The databases supported must be the following:
 - i. MUIS (Information System of the Estonian Museums)
 - ii. FOTIS (Film Archives of the National Archives of Estonia)
 - iii. ESTER (Online catalogue of Estonian libraries)
 - iv. KIVIKE (Estonian Literary Museum's Archives)
 - v. SAAGA (Estonian National Archives' online database)
 - b. When content from other databases is added, the source of this content must be displayed to the user.
 - i. This source must be saved to the database automatically.
5. The administrator must be able to create and delete relation types between object types and define its attributes.
6. People-type objects must be automatically added to event-type objects in order to display them on timelines.

VI. List of Problems

1.1 Data model

1. One book can have only one author.
2. There is no object type corresponding to manuscripts, letters, or magazines.
3. Relations between two object instances need to be created manually, especially since some objects, e.g. photos, can be inserted automatically with a script in a bulk.
4. Some objects need to be duplicated: for example, if a book or a person needs to be present on a timeline, a separate event-type object needs to be created by hand.
5. When adding photos, they need to be uploaded to two separate databases: Kivike and KS.
6. Some events and relations that have been inserted into the database are not displayed to the user on the timeline.
7. When adding a relation between two objects, there is functionality to change the relation even before it has been created during choosing the object that the active object is too be related to.

1.2 Administrators' page

1. When searching in the admin page, for example when creating a relation between a book and a photo, then it is difficult to differentiate between search results because
 - a. The results only display one attribute of the object, e.g. description.
 - b. This attribute can be the same for several objects, e.g. auto portraits of a person will all be described with the name of that person.
 - c. For photos, no image is displayed, only the description.
2. The “Select all” option will only select the objects on the current page (50 objects). Note that there are, for example, 220 pages of photos.
3. The administrator cannot choose how many object per page they wish to display.
4. The administrator is shown all of the page numbers at once (see Figure 31).
5. The current content management system is too complicated to be understood and used – it displays the website hierarchically with folders and files. Creating a vertical side menu or other page elements is out of the scope of the administrators.

6. The current content management system's WYSIWYG text insertion and formatting does not work in Google Chrome.

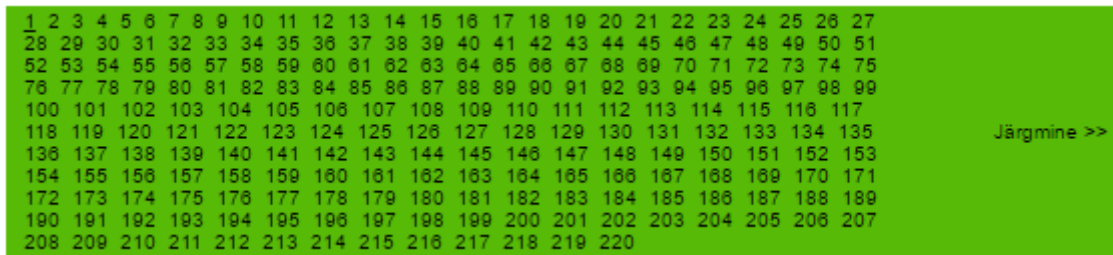


Figure 31. How the page numbers on the administrators' site are displayed.

1.3 KS website

1. There is no “Help” (either as a separate subpage or intermittently throughout the page) or “Frequently asked questions” section.
2. Search function displays results in a non-understandable manner.
3. The timeline display is cluttered.
 - a. Especially since for some events, only the year is known, in which case the date is saved as January 1st 00:00, meaning all of these events will be displayed at exactly the same point on the timeline.
4. The only way to find one specific event on the timeline is to go through them one by one.
5. The duration of an event is not displayed graphically on the timeline.
6. The section that displays events that happened in the same year as the currently active event on the “Timelines” page can be too long compared to the other contents on the page (see year 1922 on the page, for example, where all 94 other events that happened on this year are displayed as a bullet-pointed list on every event’s introduction page).
7. The user cannot browse through photos one by one.
8. There are no *forward* and *back* buttons for viewing photos.
9. Icons of photos sometimes “cut off” half of a person’s head on the image.
10. The subpage “Collections” – “Photos” does not display the photos themselves as a list, just their descriptions.
11. The interface for reading a book in HTML is not always responsive:
 - a. Sometimes a part of the text is cut off by the edge of the browser window without a scrollbar.

- b. The text displayed is not responsive with certain dimensions of the browser window.
- 12. When displaying photos, sometimes the error message “The requested content can not be loaded” is displayed disproportionately often.
- 13. When viewing a book in the HTML format or as scanned images in the special interface, the table of contents is just a list of page numbers.
- 14. When closing the interface for viewing books, it takes the user to the respective object subpage on the “Collections” menu, even when the user opened the interface from somewhere else.
- 15. The “Related materials” section sometimes is several times longer than the actual contents of an object’s subpage, meaning there is a lot of useless whitespace.

VII. Structure of subpages

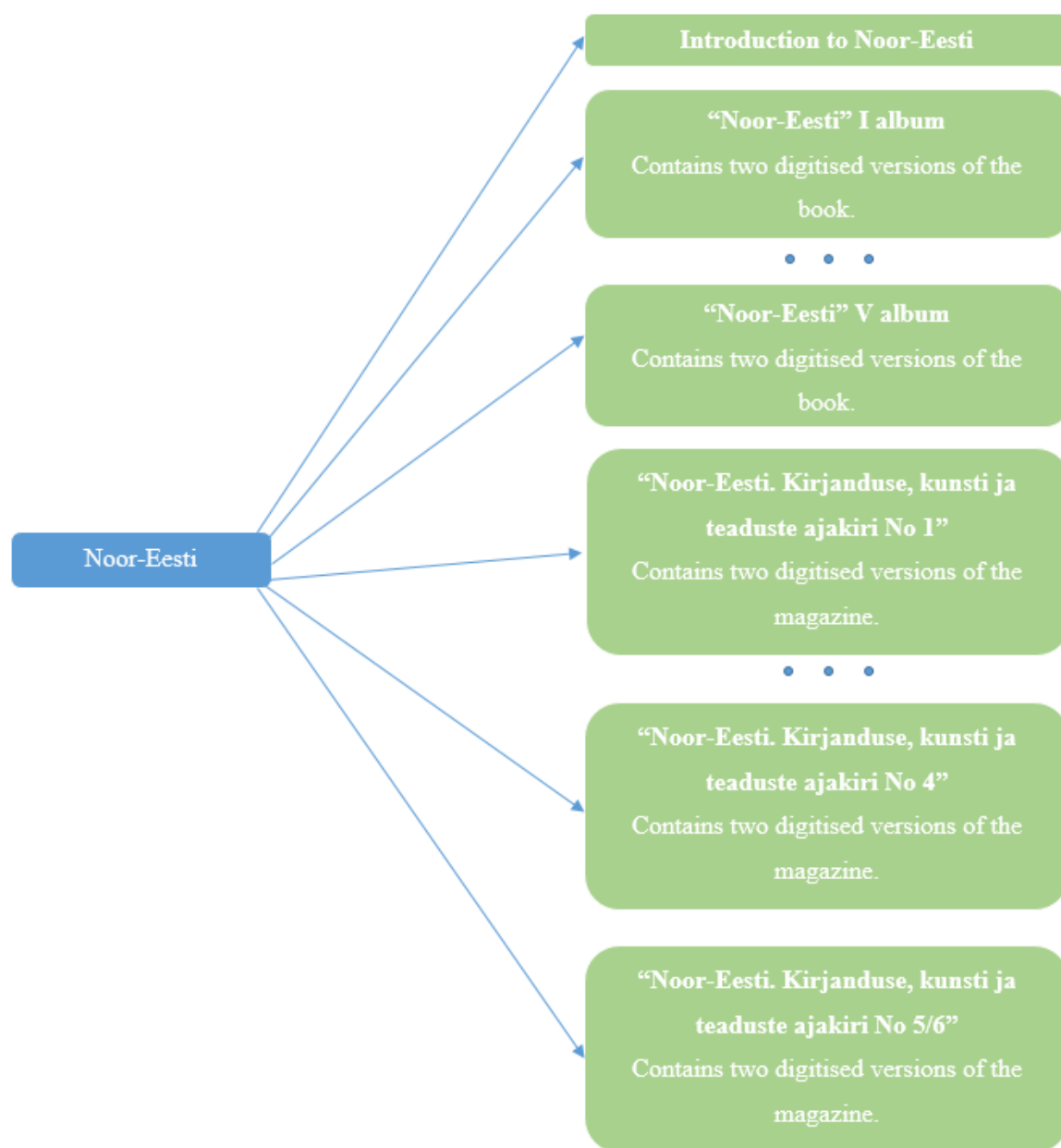


Figure 32. Layout of the page "Noor-Eesti"

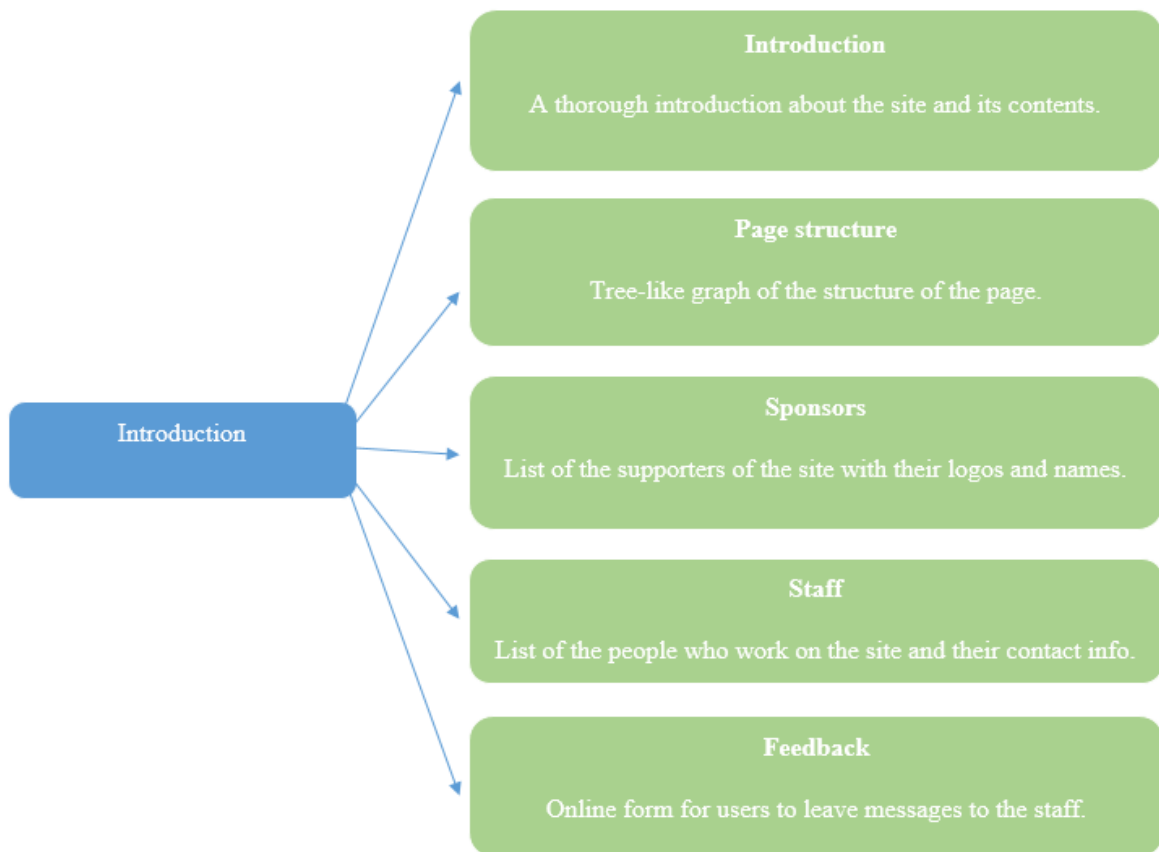


Figure 33. Layout of the page "Introduction".

VIII. Appearance of KS

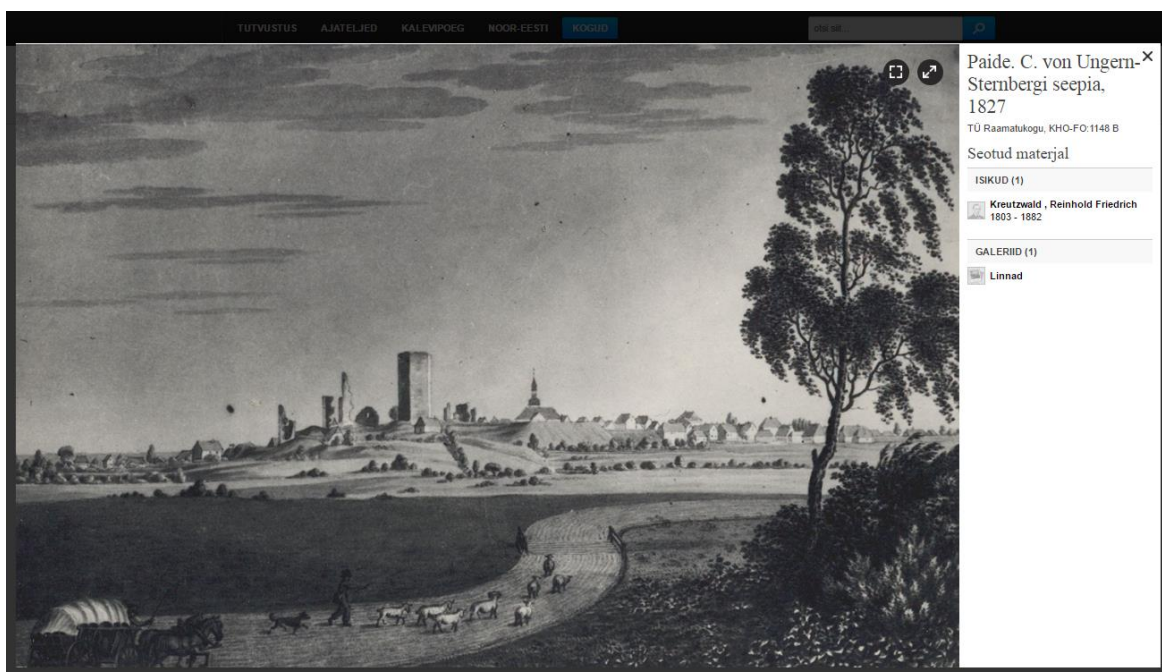


Figure 34. Interface for viewing photos.

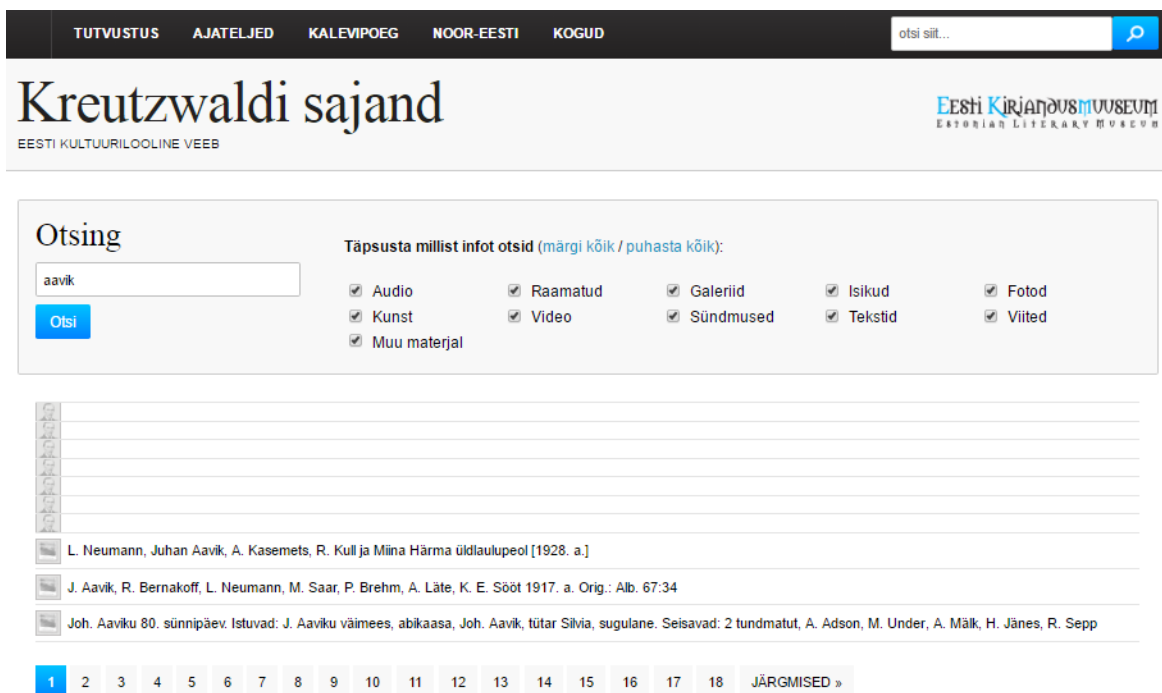


Figure 35. The search function.



Figure 36. Interface for displaying a book in HTML format.

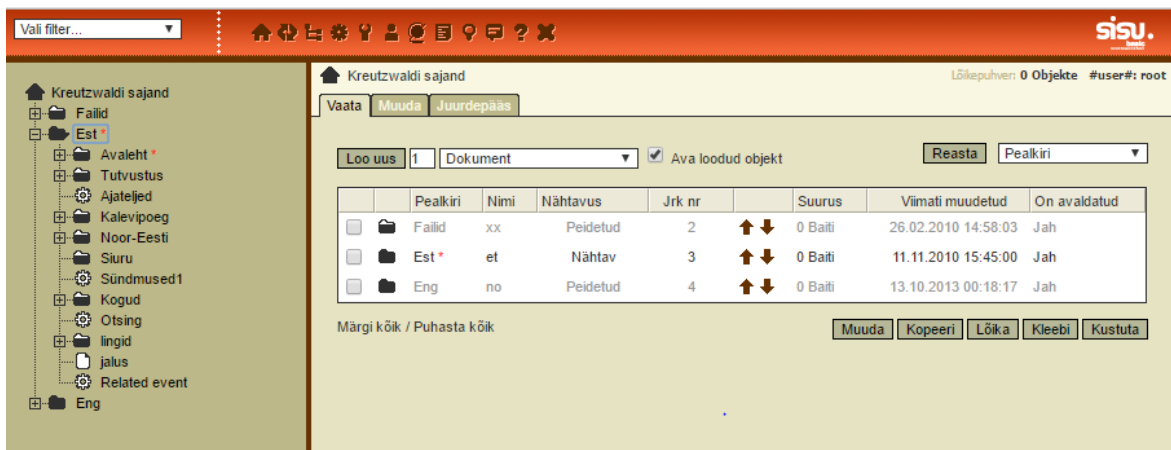


Figure 37. Appearance of the content management site for the administrators.



Figure 38. The subpage of a book-type object.

IX. Proposed changes to the data model

Table name	Attributes	Relations to other tables
<i>manuscripts</i>	Integer <i>manuscript_id</i> Varchar <i>manuscript_title_et</i> Varchar <i>manuscript_title_en</i> Varchar <i>manuscript_title_ru</i> Integer <i>manuscript_pages</i> Integer <i>pages_separated</i> Boolean <i>is_kalevipoeg</i> Boolean <i>is_nooreesti</i> Date <i>lastmodified</i> Float <i>w_h_ratio</i> Boolean <i>show_textpages</i>	1:m for <i>manuscripts</i> - <i>manuscriptspersons</i> 1:m for <i>manuscripts</i> - <i>booktextpages</i> 1:m for <i>manuscripts</i> - <i>bookpages</i> 1:m for <i>manuscripts</i> - <i>stories</i> 1:m for <i>manuscripts</i> - <i>manuscriptsevents</i> 1:m for <i>manuscripts</i> - <i>manuscriptsurls</i> 1:m for <i>manuscripts</i> - <i>manuscriptsebooks</i>
<i>manuscriptspersons</i>	Integer <i>manuscriptspersons_id</i> Integer <i>person_id</i> Integer <i>manuscript_id</i>	1:m for <i>persons</i> - <i>manuscriptspersons</i> 1:m for <i>manuscripts</i> - <i>manuscriptspersons</i>
<i>manuscriptsevents</i>	Integer <i>manuscriptsevents_id</i> Integer <i>event_id</i> Integer <i>manuscript_id</i>	1:m for <i>events</i> - <i>manuscriptsevents</i> 1:m for <i>manuscripts</i> - <i>manuscriptspersons</i>
<i>manuscriptsurls</i>	Integer <i>manuscriptsurls_id</i> Integer <i>url_id</i> Integer <i>manuscript_id</i>	1:m for <i>urls</i> - <i>manuscriptsurls</i> 1:m for <i>manuscripts</i> - <i>manuscriptsurls</i>
<i>manuscriptsebooks</i>	Integer <i>manuscriptsebooks_id</i> Integer <i>ebook_id</i> Integer <i>manuscript_id</i>	1:m for <i>ebooks</i> - <i>manuscriptsebooks</i> 1:m for <i>manuscripts</i> - <i>manuscriptsebooks</i>
<i>letters</i>	Integer <i>letter_id</i> Varchar <i>content</i> Integer <i>sender_id</i> Integer <i>receiver_id</i> Date <i>date_sent</i>	1:m for <i>persons</i> - <i>letters</i>

	Date <i>lastmodified</i>	
<i>lettersscans</i>	Integer <i>lettersscans_id</i> Integer <i>letter_id</i> Integer <i>scan_id</i>	1:m for <i>letters</i> – <i>lettersscans</i> 1:m for <i>scans</i> - <i>lettersscans</i>
<i>personsbooks</i>	Integer <i>personsbooks_id</i> Integer <i>person_id</i> Integer <i>book_id</i>	1:m for <i>persons</i> - <i>personsbooks</i> 1:m for <i>books</i> - <i>personsbooks</i>

Figure 39. Tables to be added to the data model as per author's suggestions.

X. Mock-ups of the system to be

BOOKS

ADD BOOK

123...255

"Heading of a Book"	Author's Name	Published on	DETAILS	RELATIONS
"Heading of a Book"	Author's Name	Published on	DETAILS	RELATIONS
"Heading of a Book"	Author's Name	Published on	DETAILS	RELATIONS
"Heading of a Book"	Author's Name	Published on	DETAILS	RELATIONS

25 items on a page

Figure 40. The starting point for administrators for creating a relation between two objects.

RELATIONS OF "HEADING OF A BOOK"

Person: Author's Name	Author of	DETAILS	DELETE RELATION
Event: Publishing of the book (1845)	Publishing of	DETAILS	DELETE RELATION

ADD RELATION

Figure 41. The view after clicking “Relations” of an object for the administrator when creating a relation between two objects.

CHOOSE OBJECT TYPE



Figure 42. The view after clicking "Add relation" on the previous view for an administrator when creating relations.

CHOOSE OBJECT

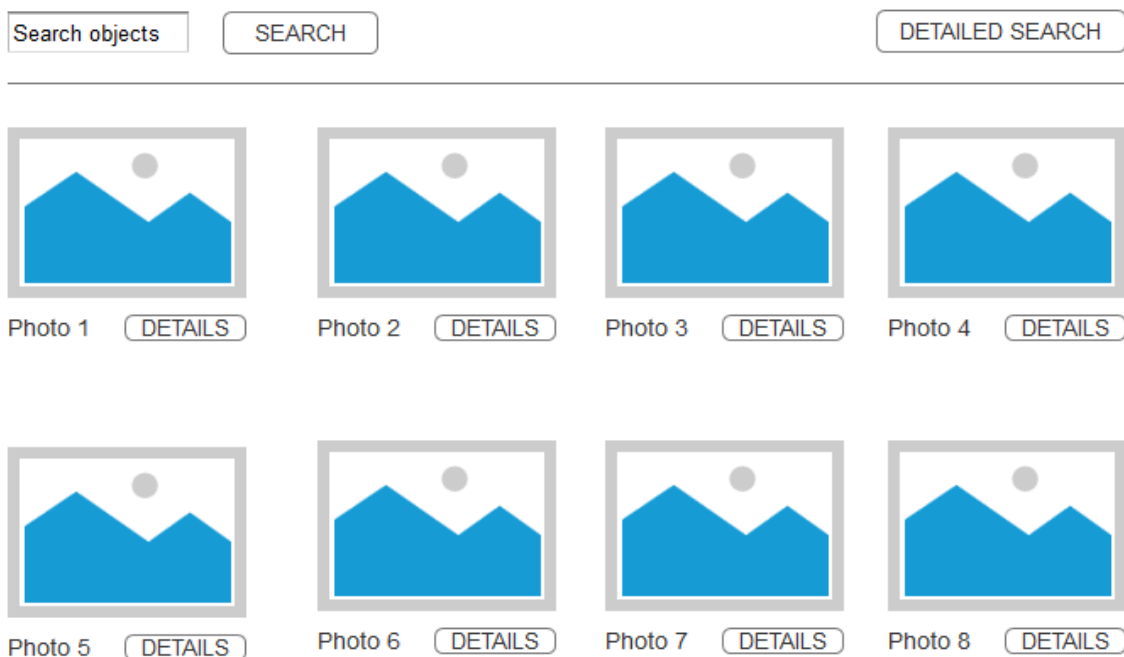


Figure 43. The view for the administrator after choosing object type "Photo" in the previous view.

CHOOSE OBJECT

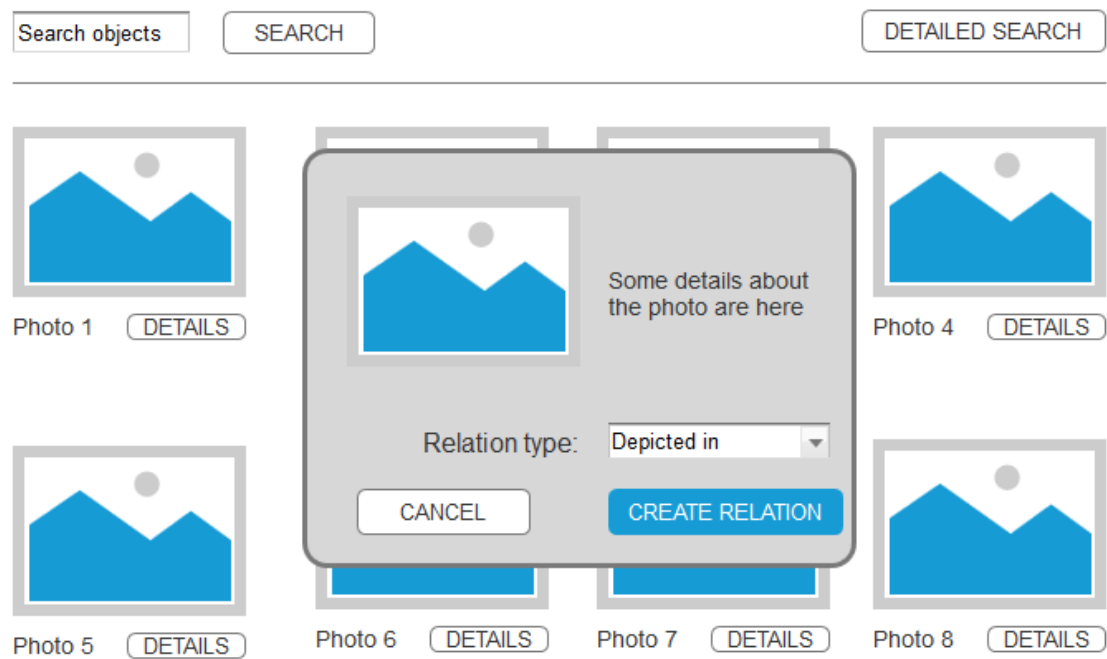


Figure 44. The final view before confirming a relation and after choosing a specific object.

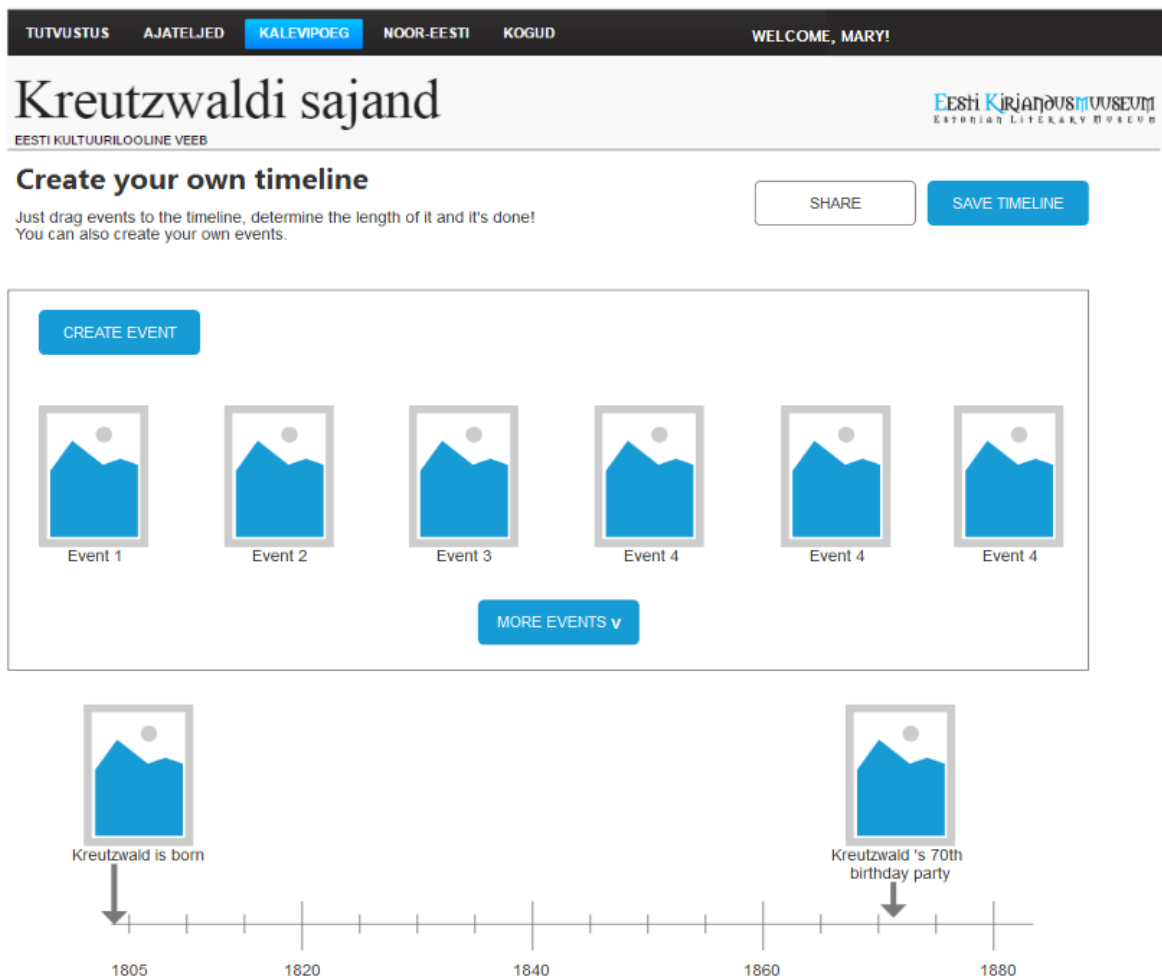


Figure 45. Mock-up of logged in user timeline creation.

Licence

Non-exclusive licence to reproduce this thesis and make the thesis public

I, Tuule Sõber,

1. hereby grant the University of Tartu a free permit (non-exclusive licence) to
 - 1.1. reproduce, for the purpose of preservation and making it available to the public, including uploading to the DSpace digital archives until expiry of the term of validity of the copyright, and to
 - 1.2. make available to the public via the online environment of the University of Tartu, including via the DSpace digital archives until expiry of the term of validity of the copyright,

my thesis

ALIGNING BUSINESS NEEDS WITH THE IT SOLUTION DESIGN FOR THE HISTORIC CULTURAL SITE KREUTZWALDI SAJAND,

Supervised by Fredrik Payman Milani,

2. I am aware that the author retains these rights.
3. I certify that granting the non-exclusive licence does not infringe the intellectual property rights or rights arising from the Personal Data Protection Act.

Tartu, 10/05/2017