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Summary

Concept for the KRIS5 land register management software

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1 Introduction

A concept for the new land register management software prototype has been created under the procurement “User experience and user needs of the land register management software and development of its user interface prototype”.

The overall objective of the procurement is to help prepare for the development of new, user-centred and more effective land register management software. In line with the overall objective, the purpose of the procurement is to analyse the needs of users of the existing KRIS4 land register system and to develop a user interface prototype for the new generation KRIS5 land register management software that would be user-centred, increase user satisfaction and help save valuable working time. The process and outcomes of the development of the user-centred KRIS5 land register management system prototype are presented in [Chapter 3](#).

The main needs identified in the course of observation interviews conducted with users of the existing land register management system KRIS4 as well as ideas for solutions to help satisfy those needs in the best possible manner are outlined in [Chapter 4](#). These ideas for solutions have been taken into account in the KRIS5 prototype.

To ensure the usability of the new system, development of the prototype was based on widely adopted patterns and principles of user-centred design. Some main principles that may not emerge very clearly from the prototype are presented in [Chapter 5](#).

2 Summary

Activities in the user-centred design process

1. Mapping the needs of KRIS4 users through 11 observation interviews.
2. Mapping ideal KRIS5 user journeys at three co-creation workshops.
3. Measuring user satisfaction with the KRIS4 management software using the SUS method.
4. Developing computer and smartphone compatible user interface prototype for KRIS5, both in Estonian and English.
5. Testing the KRIS5 prototype on 15 users.
6. Preparing a style guide and a design layout views on the basis of the prototype.
7. Developing usability metrics to be applied to the KRIS5 management software.

Prototype development was guided by user-centred design principles. In other words, the needs of KRIS4 users were identified through observation interviews and ideal user journeys were developed with users. To ensure that the system to be created is user-centred and fit for its purpose, prototype development was based on identified user needs and ideal user journeys mapped at co-creation workshops.

Also, prototype development was guided by widely adopted usability patterns and principles, and the developed prototype was tested on users to identify usability issues. Next the prototype was improved in line with usability test results. This helps to make sure that the system to be created both takes into account user needs and is easy to use.

Main functionalities

- KRIS5 provides a faster, more complete overview of proceedings directed to the user as well as of other tasks, changes made in processing, proceeding deadlines and of the user's current location within the system.
- KRIS5 makes it possible for users to send reminders and notifications to process parties, perform and change proceeding acts, change and terminate rights in the register part data view of the land register information system, access ruling previews, and sign rulings;
- KRIS5 can also be used to manage employee information, workloads and templates as well as redirect proceedings.
- KRIS5 functionalities include sending notifications to users about system errors, managing user data and permissions, changing software settings, plus KRIS5 makes it easier to contact IT support.

- KRIS5 makes it possible to perform searches using various search parameters, save searches, view statistics as well as export search results and statistics.

These functionalities have been taken into account in developing the KRIS5 prototype. The prototype includes neither a visualised register part data view of the land register information system nor ruling preview.

Computer compatible prototype in English is available here:

<https://e79t3j.axshare.com/#g=1&p=login>

Smartphone compatible prototype in English is available here:

<https://54txqc.axshare.com/#g=1&p=login>

Computer compatible prototype in Estonian is available here:

https://ij8zi1.axshare.com/#g=1&p=sisse_logimine

Smartphone compatible prototype in Estonian is available here:

https://81v98l.axshare.com/#g=1&p=sisse_logimine

The system to be developed meets, among others, the following usability requirements:

- The system to be developed is compatible with computers and smart devices.
- The system to be developed complies with WCAG 2.0 AA requirements.
- The system to be developed takes into account requirements established in a document summarising its visual design.

3 The process of developing user-centred land register management software

Next follows a brief overview of the process and outcomes of the development of the user-centred KRIS5 land register information system prototype.

1. A study on the needs and expectations of current KRIS4 users

Eight individual and three group interviews were conducted with users of the existing KRIS4 management software. The study helped to identify the needs, expectations and issues various user groups have regarding the management software. All user needs and expectations identified in the study were taken into account in developing the prototype in its scope to make sure that the system to be developed is user-centred and fit for its purpose.

Main user needs are outlined in [Chapter 4](#). The document “Kinnistusraamatu menetlustarkvara KRIS4 kasutajate vajaduste ja rahulolu uuring”¹ to be presented to the commissioning party provides a more in-depth overview of the study on user needs and its results.

2. More optimal processing based on user-centred approach

Three workshops were organised to map, with users of the KRIS4 management software, ideal user journeys in the system, being guided, among other things, by user needs identified through interviews and established in the technical specifications of the procurement. User journeys were visualised as a series of successive steps that users have to take in the system to achieve their goals. Workshops covered various proceeding acts, searches and employee management.

Main adjustments made to the user journey include the automatic sending of notifications after signing a ruling or finishing the proceeding, performing a proceeding act immediately after adding it, the option of adding data when performing proceeding acts and keeping an automatic log. The main user journey of the management software and prototype references are briefly visualised in [Appendix 1](#).

¹ “Study on the needs and satisfaction of users of the KRIS4 land register management software”, Trinidad Wiseman OÜ, 2018, available only in Estonian

The document “Kinnistusraamatu menetlustarkvara KRIS4 kasutajate vajaduste ja rahulolu uuring”¹ to be presented to the commissioning party provides a more in-depth overview of the workshops and their results.

3. A study on the satisfaction of current KRIS4 users

To assess the usability of the existing management software, a user satisfaction survey was conducted among KRIS4 users. The survey was conducted using the SUS method in which participants were asked to score ten items using a five-point scale. 36 users participated in the survey. The average usability score was 61.2. This figure indicates that the usability of the existing KRIS4 management software is below average and means poor usability.

The document “Kinnistusraamatu menetlustarkvara KRIS4 kasutajate vajaduste ja rahulolu uuring”¹ to be presented to the commissioning party provides a more in-depth overview of the study on user satisfaction and its results. Also, the document includes a description and suggestions for conducting the survey in the future to evaluate usability and user satisfaction after having finished developing the new KRIS5 management software.

4. A user interface that is easy-to-use, efficient, readily accessible and clickable, computer and smartphone compatible, and available in Estonian and English

Taking user needs and ideal user journeys as the starting point, an interactive user interface prototype for the land register management software was developed – one that is compatible with computers and smartphones, and available in Estonian and English, but without visual design yet. To ensure that the system to be created is user-centred and fit for its purpose, prototype development was based on all needs and expectations identified through the study on user needs and ideal user journeys mapped at co-creation workshops. To ensure system usability, prototype development was also guided by widely adopted usability patterns and principles.

To view the prototype, click on the following links:

- Computer compatible prototype in English is available here:
<https://e79t3j.axshare.com/#g=1&p=login>

¹ “Study on the needs and satisfaction of users of the KRIS4 land register management software”, Trinidad Wiseman OÜ, 2018, available only in Estonian

- Smartphone compatible prototype in English is available here:
<https://54txqc.axshare.com/#g=1&p=login>
- Computer compatible prototype in Estonian is available here:
https://ij8zi1.axshare.com/#g=1&p=sisse_logimine
- Smartphone compatible prototype in Estonian is available here:
https://81v98l.axshare.com/#g=1&p=sisse_logimine

The prototype was created using the Axure programme.

5. Testing the proposed solutions on users' representatives

To map usability issues, 15 usability tests were conducted with user groups, 11 tests using computers and four using smartphones. In user tests, participants were asked to resolve test scenarios, using the prototype. Test results were used to improve the prototype. Usability testing makes sure that besides being fit for its purpose the system to be developed will be easy to use as well.

The document "Kinnistusraamatu menetlustarkvara KRIS5 prototüübi testimine"¹ to be presented to the commissioning party provides a more in-depth overview of testing methods and their results.

6. General system model, logic element structure, typography rules and iconography

Being guided by the prototype, a document summarising its visual design was prepared to provide an overview of the elements, typography and icons used in the system as well as of its general design requirements. Design layout views created on the basis of the prototype also complement this document. The document on visual design and design layout views are a follow-up to the prototype and should thus serve as a basis for developing the system.

The document summarising visual design "Kinnistusraamatu menetlustarkvara KRIS5 stiili- raamat"² as well as design layout views are presented to the commissioning party.

¹ "Testing the KRIS5 management software prototype for land register information system", Trinidad Wiseman OÜ, 2018, available only in Estonian

² "Style guide for the KRIS5 land register management software", Trinidad Wiseman OÜ, 2018, available only in Estonian

7. Usability metrics to be applied in the KRIS5 system

Guided by the good practice of usability metrics, the user satisfaction study and the developed prototype, specific usability metrics were created for the KRIS5 management software. The metrics take into consideration the particular nature of the KRIS5 management software as well as that of the users' daily tasks.

Usability is defined by four attributes:

- Effectiveness
- Learnability
- Efficiency
- Error prevention

The document "Usability metrics for the KRIS5 land register management software"¹ to be presented to the commissioning party provides a more in-depth overview of the metrics and their application.

¹ Trinidad Wiseman OÜ, 2018

4 Concept

4.1 Overview of tasks

Below are underlined most critical user needs in connection with having an overview of user tasks and central ideas for solutions to satisfy those needs in the best possible manner.

1. Users need to have a complete overview of directed proceedings, other tasks and important notifications.

Ideas for solutions

- A [dashboard](#) has been created for various user groups, taking into account their needs, and dashboard settings can be adjusted according to their preferences (i.e. can be relocated on or removed from the dashboard).
- The view "[My proceedings](#)" provides the user with an overview of proceedings directed to him/her.
- Information on major changes will be communicated to the user in the form of notifications. The prototype does not feature a notifications view.

Dashboard

Dashboard settings

State of my proceedings

137
23

Not finished
Finished

New	14
In review	6
Checked	21
Pending proceeding	84
Waiting	12

[My proceedings \(137\)>>](#)

My approaching deadlines

1
2

Over deadline
Approaching deadline

Proceeding	Deadline
589201850	09.10.2018 12:50 <i>2d over deadline</i>
593201850	14.10.2018 13:45 <i>3d left</i>
596201850	17.10.2018 13:45 <i>6d left</i>

[My proceedings \(137\)>>](#)

Recent changes

Show: 5 10 15 20

Proceeding	Log	
534201850	Document added <i>11.10.18</i>	
543201850	Negative ruling <i>11.10.18</i>	
548201850	Appeal declared <i>11.10.18</i>	
552201850	State fee paid <i>10.10.18</i>	
554201850	Document missing, reminder sent <i>09.10.18</i>	
520201850	7 days till deadline <i>09.10.18</i>	
592201850	Document added <i>09.10.18</i>	
585201850	(3/14d) Ruling on omissions	

Types of my proceedings

First registration of registered immovable	13	
First registration of apartment ownership	24	
Complex proceedings	53	

Recent notifications

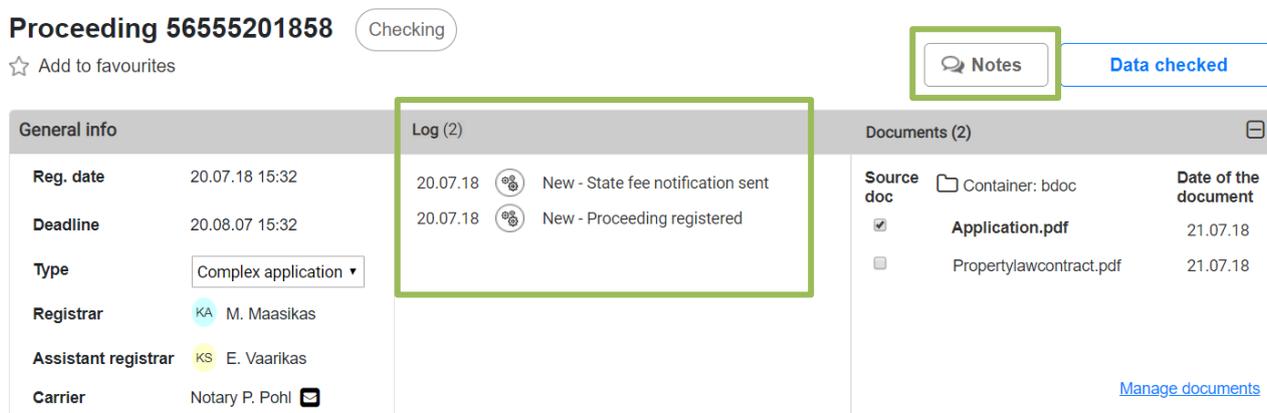
Show: 5 10 15 20

Redirection of proceeding <i>11.10.18</i>	
--	--

2. Users need to have an overview of changes in ongoing proceedings, for example, whether a document has been added or a state fee has been paid.

Ideas for solutions

- All changes in proceedings are automatically saved in a log.
- Personal notes can be added to proceedings.
- Latest changes in proceedings will be displayed on the dashboard.
- The view “[My proceedings](#)” displays the latest changes for each proceeding and separately also the state fee payment status.



3. Users need to have an overview of upcoming proceeding deadlines to be able to respond promptly.

Ideas for solutions

- Overdue proceedings or proceedings with upcoming deadlines are displayed on the [dashboard](#).
- Users receive notifications about overdue proceedings or proceedings with upcoming deadlines.
- In the view “[My proceedings](#)” critical deadlines are visually differentiated from other proceedings.
- Overdue proceedings or proceedings with upcoming deadlines are also displayed on the dashboards of and in notifications sent to supervising user groups.

Dashboard

Dashboard settings

State of my proceedings

137 Not finished 23 Finished

New	14
In review	6
Checked	21
Pending proceeding	84
Waiting	12

My proceedings (137)>>

Types of my proceedings

First registration of registered immovable	13	+4
First registration of apartment ownership	24	
Complex proceedings	53	+7

My approaching deadlines

1 Over deadline 2 Approaching deadline

Proceeding	Deadline
589201850	09.10.2018 12:50 2d over deadline
593201850	14.10.2018 13:45 3d left
596201850	17.10.2018 13:45 6d left

My proceedings (137)>>

Recent notifications

Show: 5 10 15 20

Redirection of proceeding 11.10.18 **NEW**

Recent changes

Show: 5 10 15 20

Proceeding	Log
534201850	Document added 11.10.18 NEW
543201850	Negative ruling 11.10.18 NEW
548201850	Appeal declared 11.10.18 NEW
552201850	State fee paid 10.10.18
554201850	Document missing, reminder sent 09.10.18
520201850	7 days till deadline 09.10.18
592201850	Document added 09.10.18
585201850	(3/14d) Ruling on omissions

4. Users always need to have an overview of their current location within the system and navigation hierarchy should not be too deep to prevent users from getting lost in the system.

Ideas for solutions

- Modal windows that appear over the main page do not force users to leave the page to perform a certain activity and this helps users to have a better overview of their activities.
- There are breadcrumbs and a page title on each page to assist users in identifying their exact location within the system. In addition, a corresponding menu item is displayed as active in the header, depending in which view the user currently is.

KRIS5 Proceedings Search Statistics Employees Templates Notifications (15) Sille Silk ENG Log out

Work loads Employee data Calendar

Dashboard / Employees / Workloads

Work loads

4.2 Proceedings

Below are underlined most critical user needs in connection with checking detailed proceeding data, preparing and signing rulings and sending notifications as well as central ideas for solutions to satisfy those needs in the best possible manner.

1. Users need to be able to change, add and remove proceeding data.

Ideas for solutions

- In the [detailed proceeding data view](#) users can add to and remove from proceedings register parts, cadastral units, physical shares and persons, make changes in data on physical shares and personal data as well as check state fee payments.
- After users have checked detailed data, they can transfer the proceeding to the next process partner in line. The activity is saved in a log and proceeding status is changed ("In review" -> "Checked").
- When performing proceeding acts, users can also add or change proceeding data, and these changes are displayed in the detailed proceeding data view as well.

APPLICATION DATA
PROCEEDING
NOTIFICATIONS

Register parts (3)
Cadastral unit (3)
Physical shares (4)
Persons (4)
State fee !

All changes are saved
Last saved 3s ago

#	Register part number	Owner name	Register part type	Related proceedings	Notation concerning prohibition	Status	
1	1436001	Paju Tõnu	Apartment ownership	Previous proceedings (3) Following proceedings (1)		OPEN	✕
2	1436002	Toomingas Tiit	Apartment ownership			OPEN	✕
3	1436003	Kasearu Maia	Apartment ownership		Notation of prohibition of the real right	CLOSED	✕

Add register part(s) ?

2. Users need to be able to contact the applicant or other persons associated with the proceeding to send reminders about paying state fees or filing required documents.

Ideas for solutions

- In the [detailed proceeding data view](#) users can contact via e-mail the applicant or other persons associated with the proceeding. Clicking on the corresponding icon opens an e-mail window (for example, Outlook) and a notification with appropriate content that users can adjust before sending the e-mail, if necessary.

Proceeding 56555201858 Checking

☆ Add to favourites

Notes

Data checked

General info	Log (2)	Documents (2)
Reg. date 20.07.18 15:32 Deadline 20.08.07 15:32 Type Complex applicator Registrar KA M. Maasikas Assistant registrar KS E. Vaarikas Carrier Notary P. Pohl	20.07.18 New - State fee notification sent 20.07.18 New - Proceeding registered	Source doc Container: bdoc <input checked="" type="checkbox"/> Application.pdf 21.07.18 <input type="checkbox"/> Propertylawcontract.pdf 21.07.18 Manage documents

APPLICATION DATA

PROCEEDING

NOTIFICATIONS

Register parts (3)

Cadastral units (3)

Physical shares (4)

Persons (4)

State fee

All changes are saved
Last saved 3s ago

#	Name	Identification code	RFSN	E-mail	Address	Marital status	Death/liquidated	Representative/Guardian
1	Paju Tõnu	38806120261	Yes	p.tonu@hotmail.ee	Forelli 34-56, 14234 Tallinn	Married: separate property		
2	Toomingas Tiit	35604043435	Yes	toomingas.t@gmail.com	Forelli 34-56, 14234 Tallinn			

3. Users need to have quick, continuous access to procedural documents during the proceeding.

Ideas for solutions

- In the [detailed proceeding data view](#) documents are displayed in the top side of the view to provide continuous access to documents while checking detailed data.
- Documents are displayed as separate entries and not in the container, and each document can be opened in an individual window in the detailed procedural data view as well as while performing proceeding acts.

Proceeding 56555201858 Checking

☆ Add to favourites

Notes

Data checked

General info	Log (2)	Documents (2)
Reg. date 20.07.18 15:32 Deadline 20.08.07 15:32 Type Complex application Registrar KA M. Maasikas Assistant registrar KS E. Vaarikas Carrier Notary P. Pohl	20.07.18 New - State fee notification sent 20.07.18 New - Proceeding registered	Source doc Container: bdoc <input checked="" type="checkbox"/> Application.pdf 21.07.18 <input type="checkbox"/> Propertylawcontract.pdf 21.07.18 Manage documents

4. Users need to be able to access additional data from public registers to check the eligibility of proceeding acts.

Ideas for solutions

- The management software displays required information without having to make a new inquiry. The development of the prototype is based on the assumption that in addition to existing interfaces the management software is interfaced with Population Register, Succession Register, Commercial Register, the KIS2 Court Information System, the Omniva post and logistics company and NAP as well.

5. Users need to be able to perform proceeding acts as quickly and efficiently as possible.

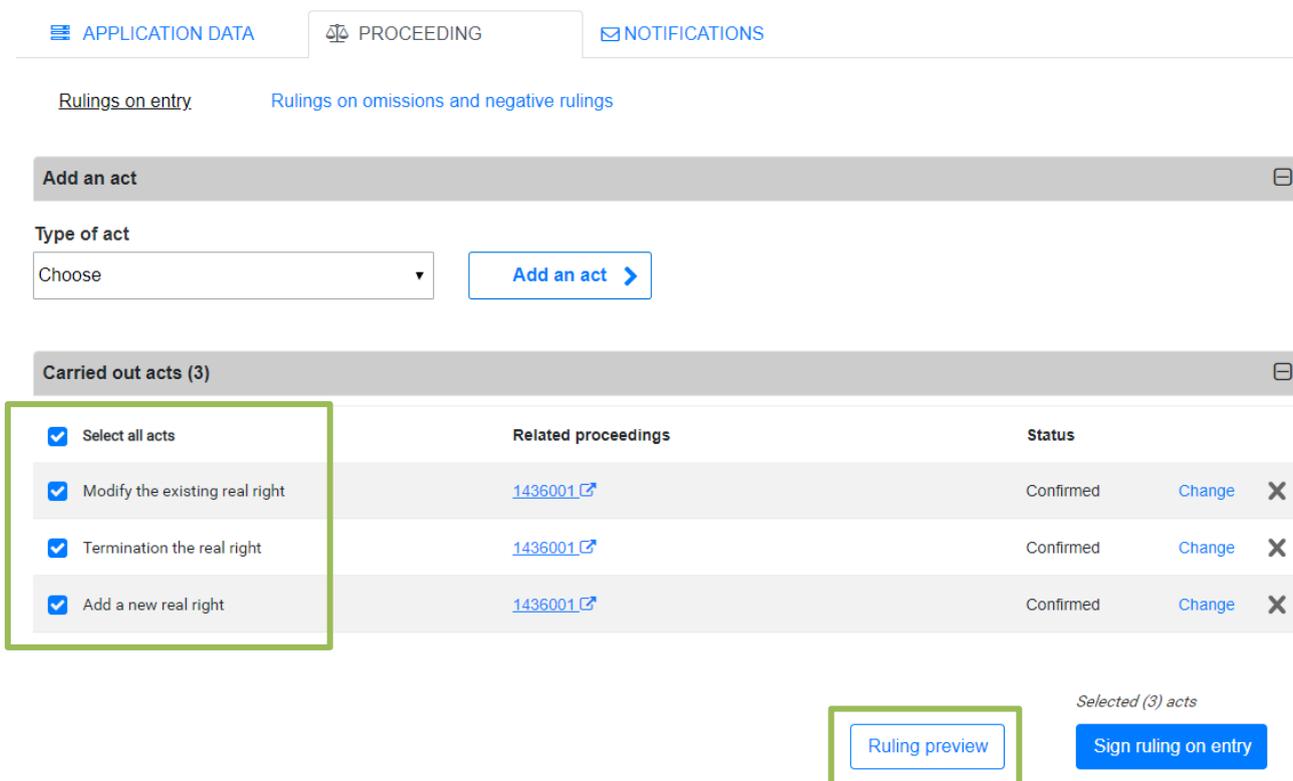
Ideas for solutions

- Users can make mass entries, assigning the same entries to several parts, for example, the same content text to several physical shares, the same owner to several physical shares or the same justified person to rights of the same category.
- Physical shares of apartment ownership can be changed in the same overview table.
- The act "[Add new real right](#)" can be used to add a number of various rights to a register part at once as well as assign different register parts to rights.
- To add required proceeding acts to corresponding rights when opening the land register data section in the information system, click on the links "Change" or "Finish". The prototype does not include a register part view of the land register information system. Requires further analysis.
- The acts "[Division of immovable into apartment ownerships](#)", "[Division of register part](#)" and "[Registration of the right of superficies in apartments](#)" make it possible to divide a main registered immovable and add and change rights under the same proceeding act.
- When preparing a proceeding act, users do not need to move between various pages and all elements necessary to perform an act are displayed on the same page. Also, users can sign entry rulings directly under a proceeding act.

6. Users need access to ruling previews on an ongoing basis while preparing rulings to be able to verify their correctness.

Ideas for solutions

- A ruling preview can be opened in a separate window while performing a proceeding act as well as before signing a ruling on entry by selecting the desired acts. The preview displays required data fields and data field can be changed in the preview. The prototype does not include a visualised rulings preview.



7. Users need to be able to sign proceeding acts as rulings on entry individually as well as several at once and change unsigned proceeding acts, if necessary.

Ideas for solutions

- In the “[Rulings on entry](#)” view entry rulings can be signed by selecting one or more proceeding acts, and in the same view changes can be made to unsigned proceeding acts.
- Rulings can be signed also while performing proceeding acts.
- Signing is done by the same method (ID card, mobile ID, etc.) that is used to log in to the management software.

☰ APPLICATION DATA ⚖️ PROCEEDING ✉️ NOTIFICATIONS

[Rulings on entry](#) [Rulings on omissions and negative rulings](#)

Add an act ☰

Type of act
Choose ▾ [Add an act >](#)

Carried out acts (3) ☰

<input checked="" type="checkbox"/> Select all acts	Related proceedings	Status
<input checked="" type="checkbox"/> Modify the existing real right	1436001 🔗	Confirmed Change ✕
<input checked="" type="checkbox"/> Termination the real right	1436001 🔗	Confirmed Change ✕
<input checked="" type="checkbox"/> Add a new real right	1436001 🔗	Confirmed Change ✕

[Ruling preview](#) Selected (3) acts [Sign ruling on entry](#)

8. After preparing a ruling, users need to send notifications to the parties concerned and also be informed about whether notifications have been sent out and, in case of negative rulings, have been received.

Ideas for solutions

- Notifications are sent to the parties concerned automatically after a ruling has been signed or proceeding has been finished.
- Information about not sending an automatic notification is forwarded to users as a notification.
- The view "[Notifications](#)" displays sent and unsent (for any reason) notifications that can be resent to the parties concerned by clicking on the corresponding button.
- Sending e-mails can be scheduled in the "[General settings](#)" view.

APPLICATION DATA		PROCEEDING		NOTIFICATIONS	
Ruling name	Related registry parts	Related persons	Signatory	Date of signing	
1. Entry ruling 201825081250	4	4	Maasikas Mari	15.08.18	

Notifications							
Notification	Persons	Related RPs	Channel	Contacts	Sent	Sender	E-mail opened/post received
OPEN	Paju Tõnu	1	E-mail	paju.t@gmail.com	28.08.18 12:07:20		30.08.18 14:25:11
OPEN	Toomingas Tiit	1	E-mail	toomingas.t@gmail.com	28.08.18 12:07:20		28.08.18 12:10:48
Error OPEN	Kasearu Maia	1					
OPEN	Vaarikas Malle	1	Post	Kikerherne tee 15, 10201, T	28.08.18 12:07:20		28.08.18 12:10:48
OPEN	Pohl Peeter	4	E-notary	notar@notar.ee	28.08.18 12:07:20		

4.3 Management of employees, templates and proceedings

Below are underlined most critical user needs in connection with the management of employees, templates and proceedings and central ideas for solutions to satisfy those needs in the best possible manner.

1. Users need to be able to change and add new entry, ruling and notification templates.

Ideas for solutions

- Users can manage entry, ruling and notification templates. The prototype includes a visualised version of the [entry templates management view](#).
- Users can add new templates on the basis of existing ones, change the wording of templates, preview templates and, if necessary, cancel templates.

Entry templates

Entry templates group

Opening of the registered immovable register part Hide invalid entries

Entry on cadastral data (Section I)

Entry on cadastral data	Change	Add new	Alates 01.10.2017	Valid
Reference for the entry of cadastral data	Change	Add new	From 01.01.2014	Valid
Entry on cadastral data	Change	Add new	01.03.2015-01.10.2017	Invalid

2. Users need to be able to manage employee data and workloads and add new employees.

Ideas for solutions

- In the “[Workloads](#)” view users can define process pairs, workloads, additional responsibilities and absence from work.
- In the “[Employee data](#)” view users can change employee data, add new employees as well as edit employees’ user permissions.

Work loads

Search by name

Filter by role

All (12) Assistant judges (9) Land registry secretary (3)

#	Land registry secretary	Assistant judge	Work load (%)	Proceedings	Additional responsibilities	Substitutions	Away from work	Away/ At work
1	Elen Vaarikas		<input type="text" value="100"/>	498	+		05.10.18 - 05.11.18 Substitute Karin Astelpaju	<input type="checkbox"/>
2	Kai Muulukas		<input type="text" value="100"/>	137			+	<input checked="" type="checkbox"/>
3	Kaisa Mustikas		<input type="text" value="100"/>	148			10.11.18-24.11.18 12.01.19-26.01.19	<input type="checkbox"/>

3. Users need to be able to adjust employees' workloads to ensure that each day the required number of employees is at work.

Ideas for solutions

- In the "[Calendar](#)" view users can see how many employees and exactly who is at work on a given day and who will be absent from work. Also, calendar settings can be adjusted as required.
- The "[Workloads](#)" view displays warnings in connection with absence from work if the number of employees required to be present at work on a given day is approaching critical levels.

Calendar

Filter: Assistant judges Land registry secretaries

<< September 2018
October
2018
>> November 2018

Today October 10th 2018

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1 <small>27/27</small>	2 <small>26/27</small>	3 <small>26/27</small>	4 <small>25/27</small>	5 <small>25/27</small>	6	7
8 <small>26/27</small>	9 <small>25/27</small>	10 <small>24/27</small>	11 <small>23/27</small>	12 <small>26/27</small>	13	14
15 <small>24/27</small>	16 <small>21/27</small>	17 <small>18/27</small>	18 <small>18/27</small>	19 <small>18/27</small>	20	21
22 <small>20/27</small>	23 <small>19/27</small>	24 <small>20/27</small>	25 <small>22/27</small>	26 <small>23/27</small>	27	28
29	30	31				

October 10th 2018

Assistant judges:

Filter: At work(24) Away (3)

- HJ Helen Jõhvikas
- MP Mirjam Pohl
- KM Kai Muulukas
- OL Assistant judge
- LK Liina Karusmari
- MN Assistant judge
- MM Malle Murakas
- AT Assistant judge
- MM Mari Maasikas
- LA Assistant judge
- KL Assistant judge
- EV Assistant judge

4. Users need to be able to redirect proceedings from one registrar to another.

Ideas for solutions

- In the [detailed proceeding view](#) users can redirect proceedings by appointing a new registrar and also adding a reason for that.
- Redirecting a proceeding is reflected in the proceeding log and parties will be notified about this.

4.4 Software management and IT support

Below are underlined most critical user needs in connection with software management and central ideas for solutions to satisfy those needs in the best possible manner.

1. Users need to be able to notify other users of the management software about system errors.

Ideas for solutions

- In the "[System notifications](#)" view users can forward notifications to other user groups about system errors, adjust notification settings and terminate the display of notifications.
- Notifications about system errors are displayed in the top sides of pages that have been specified for displaying notifications and are forwarded as notifications to users who have been specified as notification recipients.
- Users who receive a system error notification can remove it, if necessary.

System notifications

+ Send notification

Filter: Valid and pending (2) Invalid (2) All (4)

#	Notification	Recipients	Place of displaying	Period of displaying	
1	Adding new proceedings will not work from 14.10.18 11:00 until 14:00 for maintenance work.	Land registry secretary Assistant judge Head of department Head of office	My proceedings	14.10.18 08:00 - 14.10.18 14:00	Pending
2	The signing of the ruling on entry does not work at the moment due to technical problems. The IT team is working on the problem. The problem is expected to be resolved today by 15:00.	Assistant judge Head of department	Proceeding details	11.10.18 11:00 - not defined	Valid Stop displaying

2. Users need to be able to contact IT support when issues with the management software arise.

Ideas for solutions

- In the bottom right corner of each management system page there is displayed a [functionality for contacting IT support](#): users can specify the nature

Notify IT helpdesk about the problem
▼

Criticalness of problem

Select ▼

Proceeding no. ⓘ

598201850

Description of the problem

Take a screenshot ⓘ

- or -
drag a picture of the problem to here or
- or -
[search from computer](#)

Cancel
Send

and severity of the issues as well as forward screenshots of the issue.

3. Users need to be able to manage all user data and assign system permissions to users.

Ideas for solutions

- In the “[User permissions](#)” view users can assign various permissions to user groups.
- In the “User data” view users can add new users as well as make changes to their data and permissions. The prototype does not include a visualised version of this view, but it is similar to the “[Employee data](#)” view.

User permissions

#	User permissions	Assistant judge	Land registry secretary	Head of department	Head of office	Observer	Application administrator
1	Register proceedings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Fill in proceeding details	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Compile rulings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Confirm rulings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Sign rulings	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Users need to be able to manage software settings, add new data categories as well as define what data fields are visible or mandatory.

Ideas for solutions

- In the “[General settings](#)” view users can define and add languages used in the system, methods for signing rulings, e-mail schedules, number configurations, currencies, source lists of countries as well as directing of proceedings in case of absence from work.
- In the “[Type of data](#)” view users can add new data categories in the selected data group on the basis of the existing category, change data category settings and cancel data categories. The prototype includes a visualised version of the procedural data categories management view.

- In the "[Data fields for acts](#)" view users can define under the selected proceeding act whether data fields are visible and/or mandatory. The prototype includes a visualised view of the data field under the "First entry of land register part" proceeding act.

General settings

The screenshot displays four configuration panels:

- Languages:** Estonian and English are both enabled with toggle switches. A "+ Add more" link is present.
- Ways of signing a ruling:** Password, ID-card, and Mobile-ID are enabled. Smart-ID is disabled.
- Numbers:** Includes a legend for symbols like #, 0-9, Aa-Zz, YYYY, DD, and MM. Below are input fields for "Proceeding number" and "Register part number", both showing the example "###YYYY50" and "547201850".
- Notification sending time by e-mail:** The "Send after the ruling is signed" option is selected. The "Sending time" is set to 15 minutes. The "Sending period" is set to 8:00 - 17:00 on workdays.

4.5 Searching and statistics

Below are underlined most critical user needs in connection with searching and statistics and central ideas for solutions to satisfy those needs in the best possible manner.

- 1. Users need to be able to search for data using various parameters, save searches as well as export search results.**

Ideas for solutions

- Users can search for proceedings, rulings, register parts, cadastral units, documents, state fee payments and sent notifications. The prototype includes a visualised version of the [proceeding search view](#).
- Searching can be done by entering a specific keyword.
- Advanced search options are available, which means that searching can be based on various parameters.
- Searches can be saved under a desired name.
- Search results can be sorted by all parameters given in the table.
- Search results can be exported in a desired format.

- The general search function and saved searches are displayed on the dashboard.

Proceedings

Search by keyword

Saved proceedings searches

[Hide advanced search](#)

<p>Proceeding number</p> <input type="text" value="Proceeding number"/>	<p>Person data</p> <input type="text" value="Name/ID/code"/>	<p>Type of right</p> <input type="text" value="Choose"/>	<p>Period</p> <input type="text" value="Date/period"/>
<p>Proceeding type</p> <input type="text" value="Choose"/>	<input type="checkbox"/> Applicant <input type="checkbox"/> Carrier <input type="checkbox"/> Devisee <input type="checkbox"/> Dead/liquidated	<input checked="" type="radio"/> Valid <input type="radio"/> Invalid <input type="radio"/> Both	<p>Reg. date</p> <input type="text" value="Date/period"/>
<p>Proceeding state</p> <input type="text" value="Choose"/>	<p>Registrar/assistant registrar</p> <input type="text" value="Name"/>	<p>Date of signing</p> <input type="text" value="Date/period"/>	<p>Proceeding deadline</p> <input type="text" value="Date"/>
<p>Delivery channel</p> <input type="text" value="Choose"/>	<input type="button" value="Cancel filters"/> <input type="button" value="Search"/>		<p><i>Results 172</i></p>

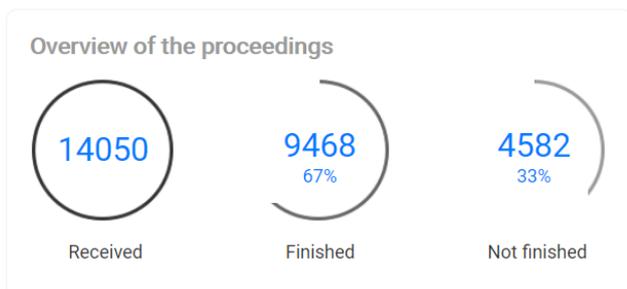
2. Users need to be able to view statistics for the selected period and export the statistics.

Ideas for solutions

- Statistics are displayed for proceedings, prepared rulings, register parts, cadastral units, documents, state fee payments and sent notifications. The prototype includes a visualised version of the [proceeding statistics view](#).
- The user can define the period for which statistics are displayed.
- Statistics can be exported in a desired format and in required sections.
- Important information on current statistics is displayed on the dashboard.

Proceedings

Choose period



5 Usability design principles

The prototype relies on widely adopted patterns and principles of user-centred design. Below are presented some vital principles of usability design that should be taken into account in the development of new management software and that may not emerge very clearly from the prototype.

Central principles to be followed in developing the new system

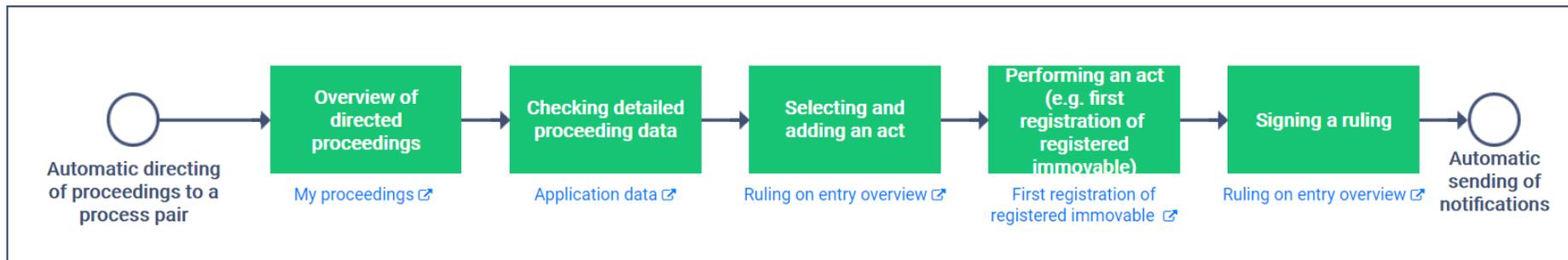
- The system to be developed is compatible with computers and smart devices.
- The system to be developed complies with WCAG 2.0 AA requirements.
- The system to be developed takes into account requirements established in the document summarising its visual design “Kinnistusraamatu menetlustarkvara KRIS5 stiili- raamat”¹.
- Breadcrumbs are on each page, except on the dashboard and in the mobile version.
- Moving between the tabs and closing modal windows there are no unnecessary scrollings. This means that the user will always stay in the same place where he used the interaction, for example, clicked on the link.
- Modal windows do not close when you click outside the modal window.
- Data input in fields follows contemporary usability principles, for example, auto-suggest, multi-select, etc.
- The system to be developed saves data automatically and users are informed about this with a notification “All changes saved” displayed in the top right side of a page.
- Error messages are clear and understandable and notify users about mistakes made and about what needs to be done to resolve the issue.
- Depending on the role, when opening the detailed proceeding data view the “Application data” tab (for example, to a land register secretary) or the “Proceeding” tab (for example, to an assistant judge) is displayed to facilitate their main journey in the system.
- When scrolling, sticky table headers float at the top of the page and each table row is therefore numbered.
- When removing data users are always asked to confirm their decision in a separate modal dialogue window.
- In the “My proceedings” view set filters apply until users adjust them.
- Tab headers display in addition to the tab name a specifying icon or other additional information to provide a quick overview without opening the tab (for example, when state

¹ “Style guide for the KRIS5 land register management software”, Trinidad Wiseman OÜ, 2018, available only in Estonian

fee is not paid, in the detailed proceeding data view the “State fees” tab displays a warning icon; when detailed data has been checked by a land register secretary, the “Application data” tab displays an icon for positive feedback, for example, a green check mark).

Annex 1. Main user journey in the land register management software

Main user journey in the land register management software



Prototype reference: https://e79t3j.axshare.com/#g=1&p=user_journey&fn=0&dp=0&c=1