User manual
MTinfo 3000 web

Dual Inventive
Ubiquitous Rail

DUAL INVENTIVE | BELGIËSTRAAT 5 | 5061 KG OISTERWIJK

Telephone: +31 (0)13-5339969
Email: info@dualinventive.com
Website: dualinventive.com

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1 PREFACE

The MTinfo 3000 IoT platform has been developed in line with the rail and information standards EN 50126, EN 50128, EN 50129, ISO 9001, ISO 14000 and ISO 27001 for maximal safety and security. As well as having its own private cloud, which can be accessed via the internet, MTinfo 3000 also offers worldwide secure mobile communication with systems in the field. The platform also complies with all privacy standards according to the new European legislation. The platform has Safety Integrity Level 4 (SIL 4), which is the highest available standard in the market for managing railway safety plans.

Please read this manual carefully. For MTinfo 3000 to be used safely and correctly, it's important that you fully understand and follow each step accordingly. Always keep this manual to hand, so you can use it at any time.

This manual is also available on https://www.dualinventive.com/en/downloads.

If you encounter any ambiguities while using MTinfo 3000, please report them via info@dualinventive.com or by telephone. Your feedback is important to us.

To support the use of MTinfo 3000, resources have been made available by Dual Inventive which can be found on our website https://www.dualinventive.com.

No rights can be derived from the information in this user manual. The reproduction or distribution in printed, written and/or audio-visual form is prohibited, unless Dual Inventive has permitted this beforehand.

Dual Inventive has originally written this manual in English. If anything is unclear or deviates from the original in a translated version, the original English document is leading.

1.1 Purpose user manual

The purpose of this user manual is to instruct the user on the correct and safe use of MTinfo 3000. The platform is the web interface for various Dual Inventive products, for example ZKL 3000 RC and RDI 3000. New products are under development and will be added to MTinfo 3000.

This user manual contains instructions regarding the:

- setup of safety plans;
- planning of safety plans;
- remote switching of protection zones;
- real-time monitoring of safety devices;
- generating reports.

It is possible to use multiple Dual Inventive products, named devices, in the same protection zone and to manage them simultaneously. As you will see in the main menu, MTinfo 3000 has many functions and possibilities. Not all of these are covered in this manual. For more information you can always contact us.

The following documents are referenced in this manual:

- User manual MTinfo 3000 app;
- applicable user manuals of Dual Inventive products.

How to use MTinfo 3000 is similar for Dual Inventive's safety products. If any product specific information is applicable, see the appendix for that product in this manual.

1.2 User

Typical users of MTinfo 3000 are:

- the work planner who prepares safety plans and assigns the locations for installing devices on the railway track;
- the installer, the track worker who installs devices on the railway track;
- the operator, the track worker who switches devices on the railway track.

The work planner will frequently use MTinfo 3000. The installer and operator will frequently use the app. Users can be named in accordance with their assigned task in MTinfo 3000, for example: Project Designer, Project Planner, Project Validator, Project Verifier, etc.

Every user of MTinfo 3000 must meet the following requirements:

- certified to work with MTinfo 3000;
- authorised by the user company administrator for the needed access and user rights for MTinfo 3000.

After certification, the user receives a personal MTinfo 3000 account. See 3.1 for the terms of use.

1.3 Reading guide

To alert the reader to safety issues and important information, the following symbols and terms are used in this manual:

SYMBOL	MEANING
	WARNING Indicates a hazardous situation which could result in death or serious injury and/or damage to the product or the surrounding area if the safety instructions are not followed.
	NOTE Provides important information.
	NOTE Refers to a document.

1.4 Abbreviations

ABBREVIATION	MEANING
SIL	Safety Integrity Level
RDI 3000	Remote Detonator Installer 3000
ZKL 3000 RC	Line Blockage System 3000 Remote Control

Table 1-1: Abbreviations

NOTE
The figures in this manual show examples of several devices and projects in a figurative sense.

2 TECHNICAL SPECIFICATIONS

MTinfo 3000 is an online application that does not require any software to be installed on your computer. After registration, authorisation and authentication, MTinfo 3000 can be used on any computer with an internet connection.

The minimum requirements are:

SPECIFICATION	VALUE
Internet	• Broadband
Computer	• Processor at least 1.5 GHz • Internal memory at least 2,048 MB • Video card at least 512 MB • Screen resolution of at least 1,366p by 768p
Web browser	• Google Chrome latest version (recommended) • Microsoft Edge latest version
Recommended software	• Adobe Acrobat as PDF reader to view reports • Google Earth (for projects 'GPS-Track')

Table 2-1: Minimum requirements

NOTE
If the requirements for the needed software and hardware are incorrect or absent, Dual Inventive is not responsible for the consequences.

3 TERMS OF USE

DANGER
Please read all terms of use and instructions for the first use carefully before using MTinfo 3000. Ensure that you fully understand the principles of MTinfo 3000 and how it works practically. When precautionary measures and safety instructions are not properly followed by the user there is a risk of electrocution, fire or even death due to the railway environment.

3.1 Terms of use

1. You may only use MTinfo 3000 when:
   - you are trained and certified to work with the applicable Dual Inventive products;
   - you are authorised by the user company for the right access and user rights;
   - the products are certified for the deployment area.
2. Dual Inventive creates a user account for the company. This user account is the company's administrator and is the nominated contact person for your company. The administrator is responsible for creating and managing users and their respective rights for using Dual Inventive product(s), in such a manner that misuse is avoided.
3. As a certified user, you are responsible for:
   - the received user rights, username and password and/or PIN code;
   - keeping the password and/or PIN code secret;
   - working safely with Dual Inventive products.

WARNING
Always respond to service alerts from devices when something is not working correctly.

4. There are certain situations where you may be prevented from switching protection zones. For more information about these situations, refer to the applicable user manual of the Dual Inventive product.
5. Used hardware, software settings, firewalls etc. could limit the connection to MTinfo 3000. When you encounter any issues, please discuss it with your IT staff.
6. See Table 2-1 and visit https://www.dualinventive.com to find out which browsers and devices are supported by MTinfo 3000 and the app. If needed, request support from Dual Inventive.
7. Make sure the correct mobile phone is present. This concerns the user's SIM card in a functioning mobile phone which is used to transmit and receive messages to and from MTinfo 3000. Arrange a mobile phone with push message functionality. Use the same telephone number that the system links to the assigned user, for instance by exchanging the SIM card.
8. When entering a user into MTinfo 3000, ensure that the correct language is activated. If needed, users can change the language.
9. If you have lost login details and/or PIN codes, immediately contact the company administrator within your organisation to block the account to avoid misuse. If internet is available, please go to MTinfo 3000 and change the password and PIN code to avoid misuse.

10. While preparing projects, make sure to have internet connection.
11. Assign at least two users per project who are authorised for setting-up, releasing and returning projects. MTinfo 3000 offers the possibility to grant several users the rights to manage projects.
12. If a scheduled user is ill or absent, contact the person with rights for the project planning. Change the project planning according to the procedure. Schedule another or second user.
13. If the location of a device must be changed, contact the person with rights for the project design. Change the project design according to the procedure.
14. Check the connection with MTinfo 3000 if it cannot be reached. If a device is not present in MTinfo 3000, the project cannot be released.

3.2 Instructions for the first use

1. Ensure that the software on your computer is kept up-to-date, including your web browser, Google Earth and PDF reader.
2. Follow the applicable, local regulations before entering the worksite.
3. Always take care of your own safety within the track environment, following the current applicable legislation.
4. Always use a secure connection with MTinfo 3000. The connection is safe to use when the web address is preceded by https://.

4 PROJECT USERS AND TASKS

MTinfo 3000 utilises a role-based access control system. Project users are created by the company's administrator (see 5.6). For each project, MTinfo 3000 tasks are assigned to right-bearing project users. The order of the project tasks is not fixed.

Table 4-1 shows an overview of the MTinfo 3000 tasks:

TASK	EXPLANATION
Setup	Creating projects and assigning tasks to project users. Assign tasks to at least two project users. This way, more than one person can always change the project.
Design	Creating protection zones and assigning devices to protection zones.
Verify design	Verification of the project design. **Do not assign this task to a project user who is also responsible for the design.**
Validate design	Validation of the project design. **Do not assign this task to a project user who is also responsible for the design or design verification.**
Plan	Assigning switch users to protection zones. This means linking switch users to protection zones and determining the time frames for switching protection zones.
Verify planning	Verification of the project planning. **Do not assign this task to a project user who is also responsible for the planning.**
Validate planning	Validation of the project planning. **Do not assign this task to a project user who is also responsible for the planning or planning verification.**
Release	Release the project to be able to use it. Devices will be reserved to the project.
Return	Return the project so the protection zones no longer can be switched. The devices are no longer reserved to the project.
Closing	Close the project to archive it. A closed project can never be released again, but it can still be viewed or duplicated.

Table 4-1: MTinfo 3000 tasks

5 USING MTINFO 3000

This section provides an overview of the MTinfo 3000 functions. How to use them is explained in section 6 to 10.

This section explains the basic features of MTinfo 3000:

- icons and actions;
- signing in;
- dashboard;
- service messages;
- creating and managing companies;
- creating and managing users;
- search and view projects.

5.1 Overview of functions

The MTinfo 3000 functions are divided in three main sections:

- creating projects: setup, design and plan projects;
- managing projects: release, return and close projects;
- switching protection zones.

Additional functionalities in MTinfo 3000 are:

- creating and managing various types of reports;
- viewing the real-time status of devices;
- adding data to devices;
- managing documents within projects;
- logging users and tasks within projects.

NOTE
Which MTinfo 3000 functions you can access, depends on the assigned rights.

Several MTinfo 3000 functions consist of multiple steps. Some of these steps are optional.

Table 5-1 shows an overview of the MTinfo 3000 functions and their steps:

SECTION		FUNCTION	STEP		OPTIONAL
6.	6.1	Setup project	1.	Project info	
			2.	Users	
			3.	Tasks	
	6.2	Design project	1.	Devices	
			2.	Protection zones	
			3.	Setup	
			4.	Message	X
	6.3	Plan project	1.	Switch users	
			2.	Protection zones	
			3.	Instruction app	X
			4.	Documents	X
			5.	Access levels	X
			6.	Devices	X
	6.4	Validate and verify			
7.	7.1	Release			
	7.2	Return			
	7.3	Close			
8.		Switching	1.	Protection zone(s)	
			2.	Switch	
9.		Reports	1.	Report info	
			2.	Users*	
			3.	Devices	
			4.	Display	
			5.	General	
10.	10.1	Real time status			
	10.2	Adding data to devices			
	10.3	Templates	1.	General	
			2.	Questions	X
	10.4	Documents	1.	General	
			2.	Documents through the app	
	10.5	Project log			

Table 5-1: MTinfo 3000 functions

* some reports also have the step Projects.

5.2 Icons and actions

MTinfo 3000 uses a set of recurring icons for actions. Table 5-2 explains the icons:

	EXPLANATION
	Back to the Dashboard.
	Create a new item (project, user, company, etc.).
	Cancel or close an item. The item will not be saved.
	Download a report or document.
	Duplicate an item.
	Return to the user overview.
	Return to the user roles
	Generate a report.
	Check and approve or reject the performed step.
	Personal MTinfo 3000 profile.
	Save an item.
	Show the project overview.
	Switch protection zones.
	Close a project. See all closed projects.
	Show the reports overview.
	View the real-time status of devices.
	Show the assigned tasks.
	Start an assigned task.
	Upload files.
	Delete selected items.
	Go to the next step.
	Go back to the previous step.
	Edit an item.
	Add comments.
	Search for an item.
	Warning for unwanted conditions.

Table 5-2: Explanation of icons

5.3 Getting started

To use MTinfo 3000, go to the landing page and sign in:

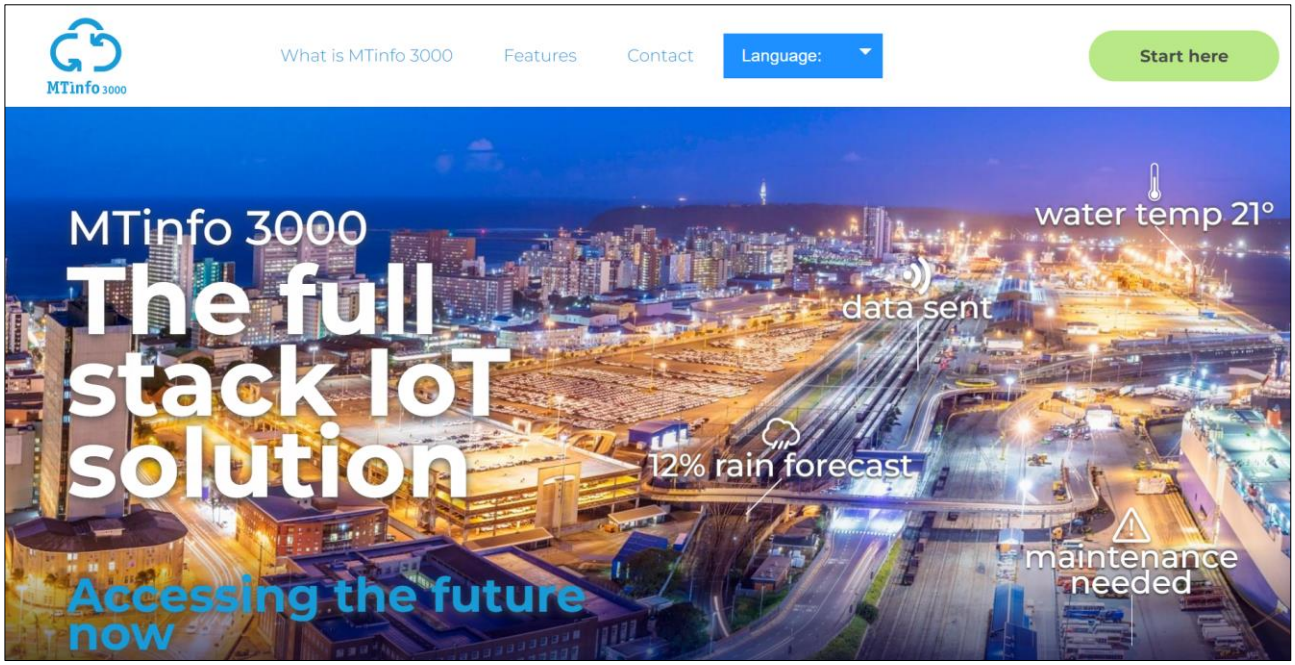

Figure 5-1: Landing page MTinfo 3000

1. Go to www.mtinfo3000.com.
2. Click 'Start here' in the upper right corner.

The window for signing in appears:

Figure 5-2: Signing in

3. Enter your Username, Company code and Password.
4. Click 'Accept agreement', read the 'IoTaaS Terms of Use MTinfo 3000' and accept them.
5. Sign in.

5.4 Dashboard

After signing in, you will see the dashboard:

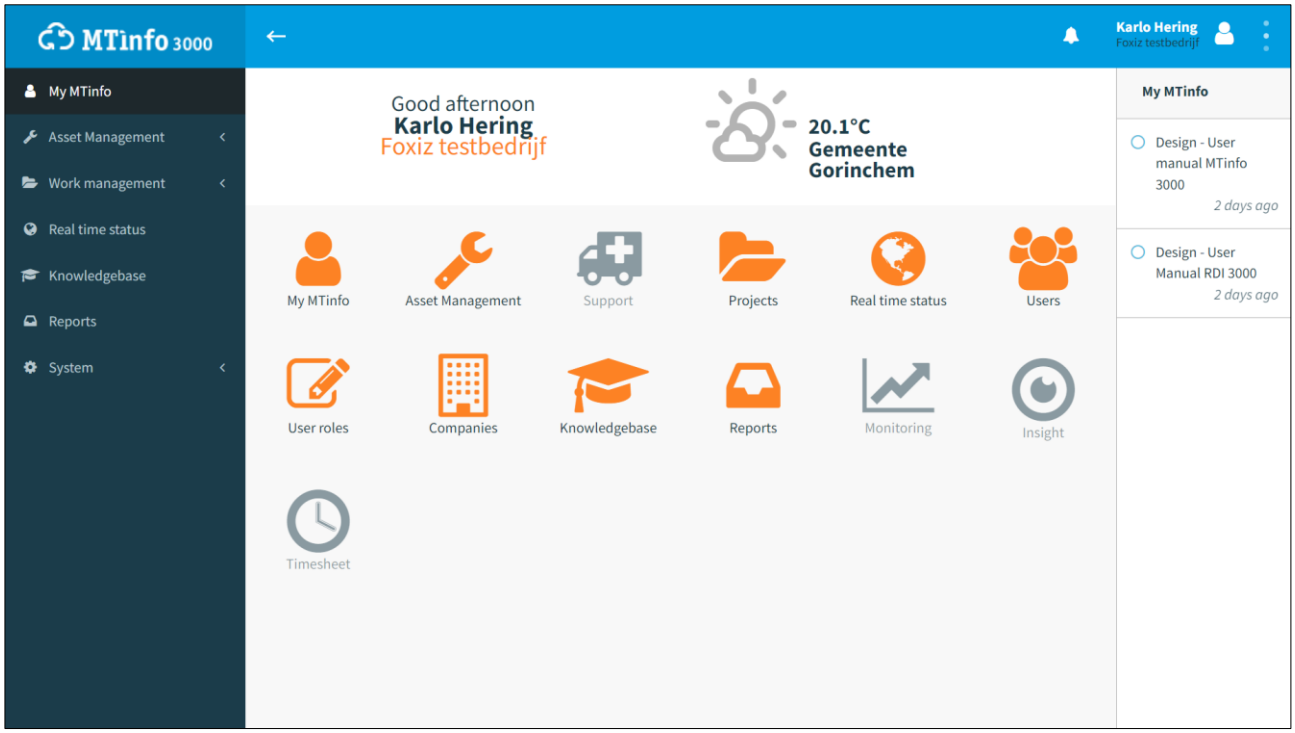

Figure 5-3: Dashboard

From the dashboard, you can navigate to projects, reports, devices, change settings, etc. The applicable functions will be discussed in the next sections of this manual.

The upper right corner of the Dashboard has the following functions:

- The button User/Company Name, gives you access to:
  - My profile;
  - My company;
  - Privacy statement;
  - Contact us;
  - Logout.
- The blinking dots (•) indicate a good internet connection. A blinking **!** indicates no internet.
- Displaying banners, alerts and tasks.

On the left side, you see a menu with several functions. This menu is always available on the individual screens of MTinfo 3000. You can hide (←) or display (≡) this menu.

On the right side, you see My MTinfo. This menu shows an overview of the assigned tasks in MTinfo 3000.

5.5 Service messages

Users can receive the following service messages from MTinfo 3000:

- emails regarding projects;
- service alerts regarding, for example required maintenance or battery status;
- push notifications (mobile app);
- security warnings (in case rights have changed or a user logs in from a different IP address);
- (periodic) reports were generated and documents that are filled in by/for project users.

Emails regarding projects can be turned off under My profile (Receive project emails: No). Services alerts and push notification are safety related and cannot be turned off.

NOTE
When using the MTinfo 3000 app, you must accept push notifications on your mobile phone.

5.6 Creating and managing companies

If you have the assigned rights, you can create and manage companies.

1. Go to the Dashboard (Figure 5-3) and click Companies.

The page Search companies appears:

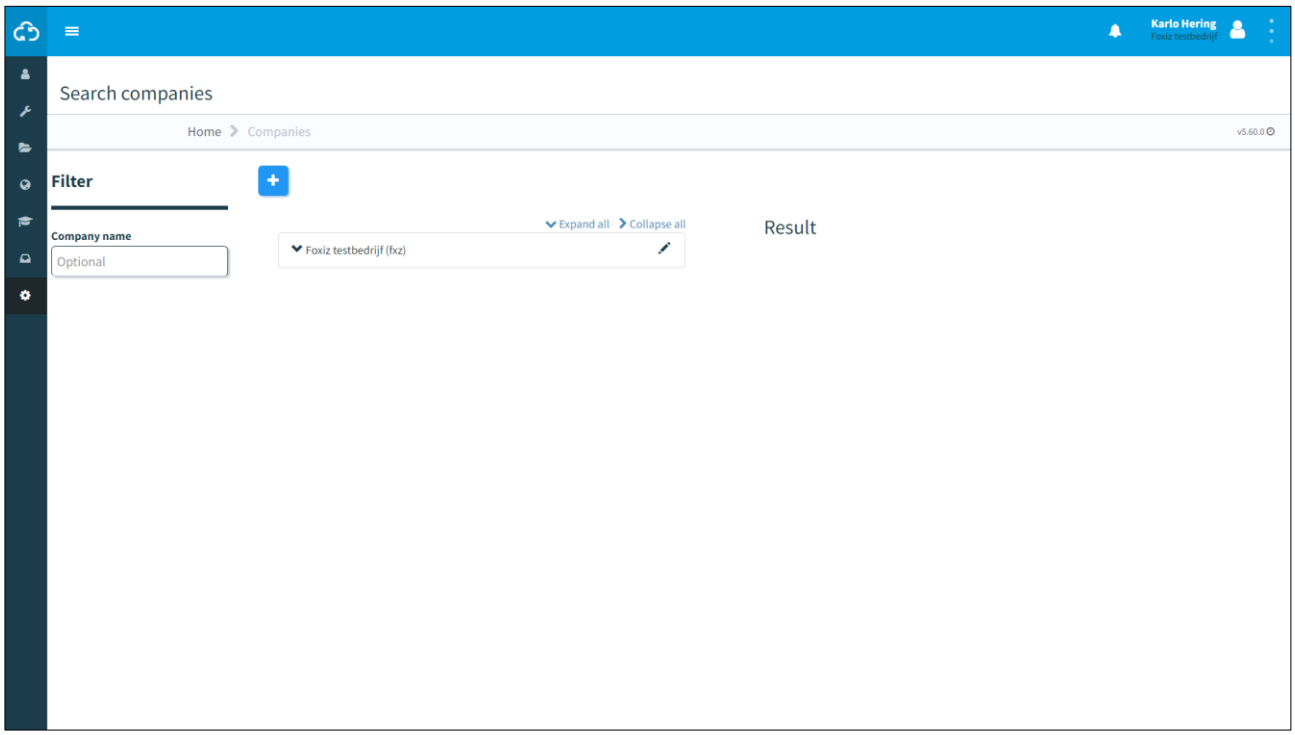

Figure 5-4: Search companies

1. Click the icon to start creating a new company within the parent company.

Follow steps 1 to 3 to create a new company.

5.6.1 Step 1 - Info

In step 1 of creating companies, add the required company information.

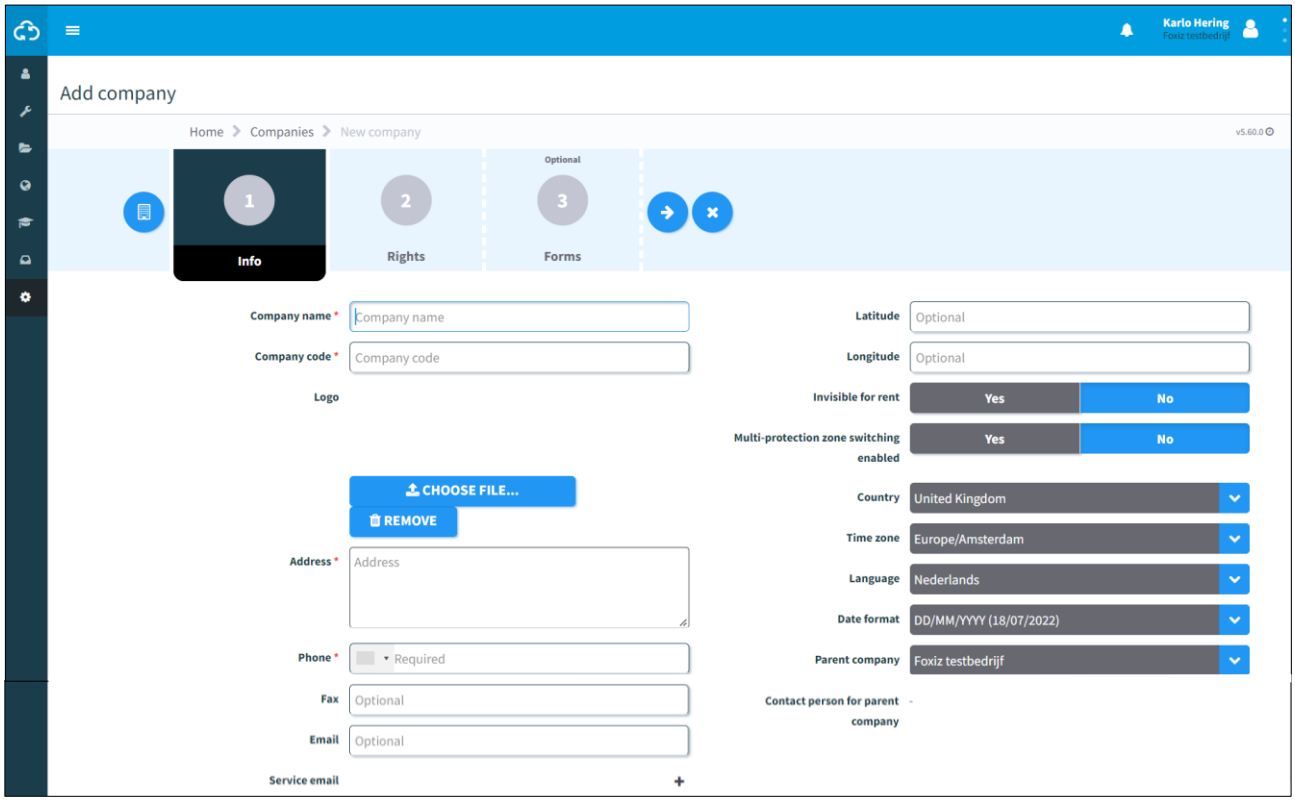

Figure 5-5: Creating companies - info

1. Fill out the required fields. Note: select the country code of the telephone number.
2. Fill out the optional fields.
3. Upload optionally files (max. 8 MB).
4. Go to step 2.

5.6.2 Step 2 - Rights

In step 2 of creating companies, select the available rights.

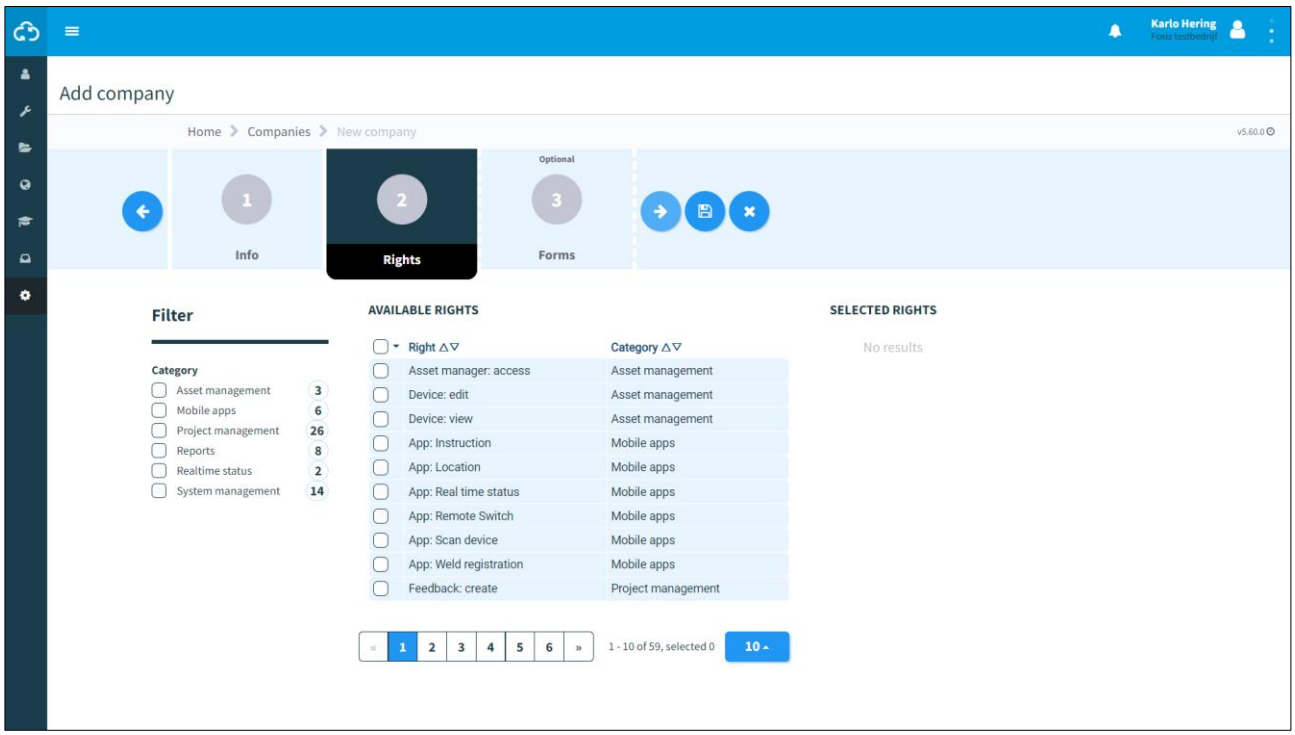

Figure 5-6: Creating companies - rights

1. Select the available rights.
2. Go to step 3.

5.6.3 Step 3 - Forms

In step 3 of creating companies, select forms. This is an optional step. Before you can select forms, templates must be created (see 10.3).

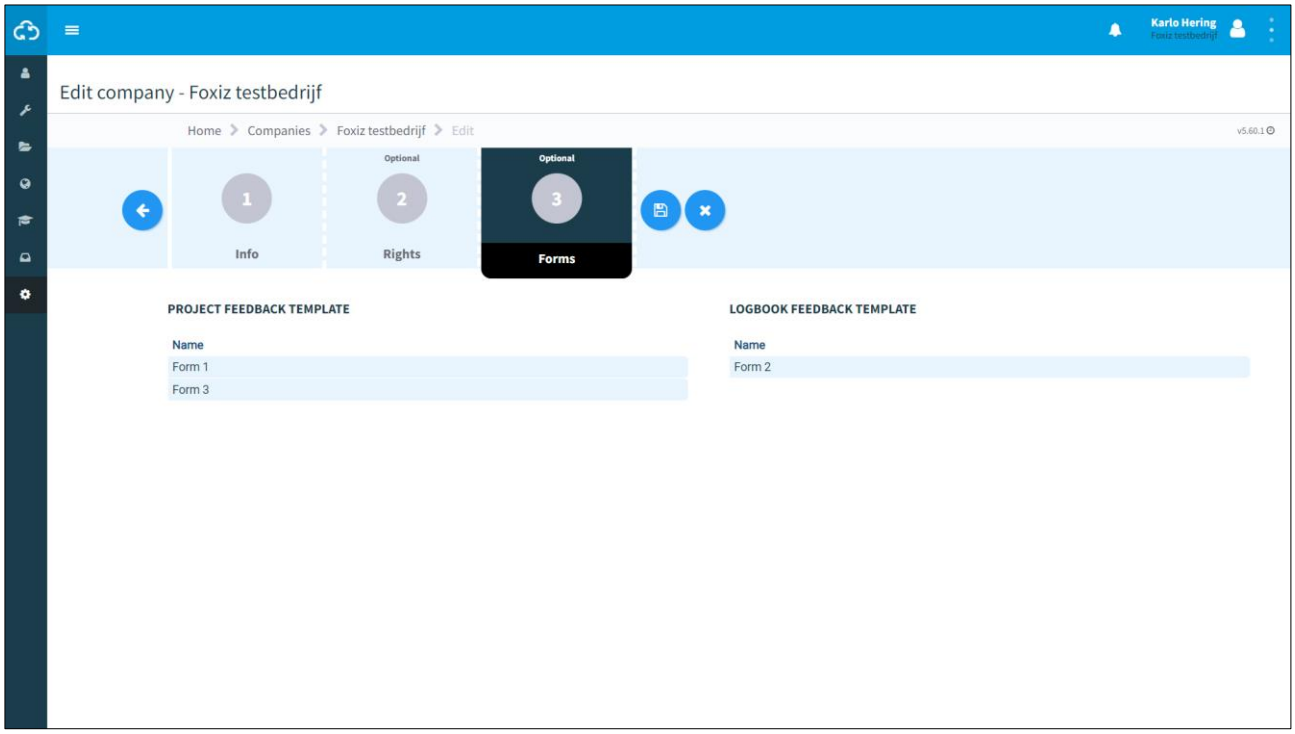

Figure 5-7: Creating companies - forms

	1. Optional: select one or more forms.
←	2. If needed: change any entered data of step 1 and 2 before saving the company.
💾	3. Save the company.
✖	4. If needed: cancel the company at any point. The entered data will not be saved.

After saving the company, the page View company appears:

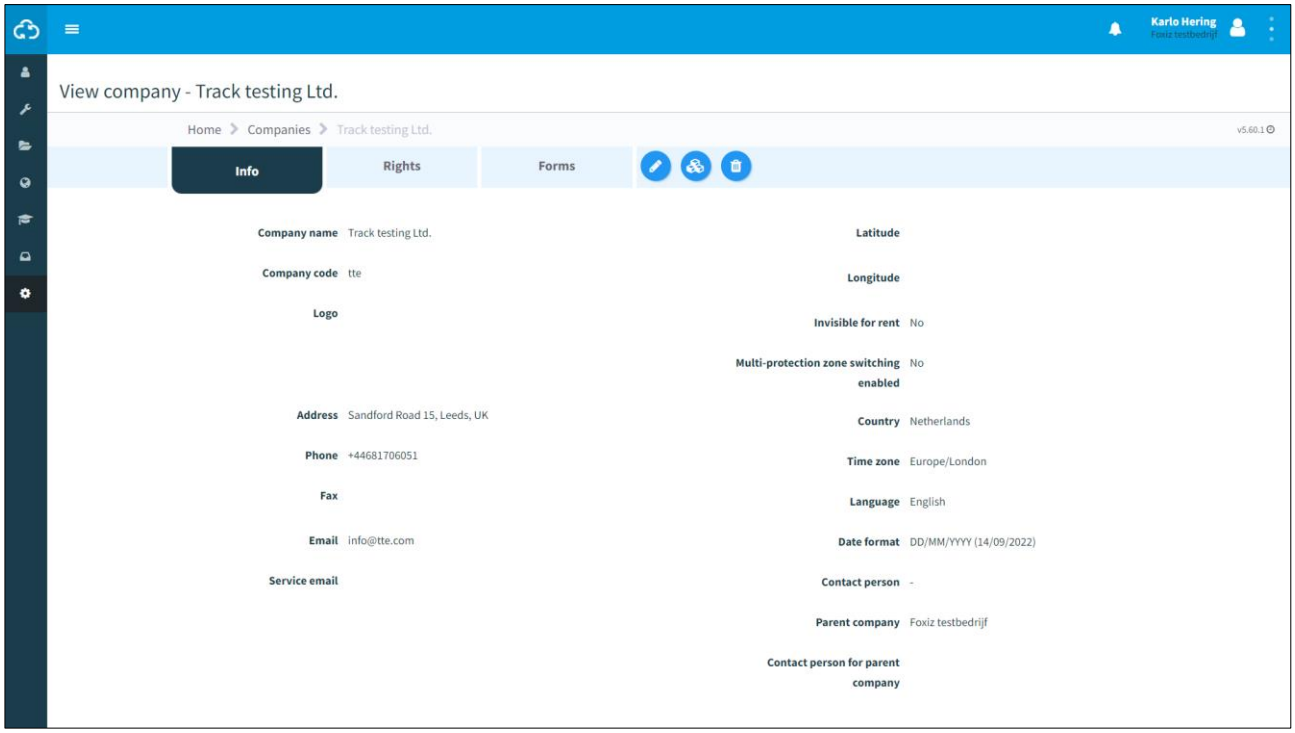

Figure 5-8: View company

From this page, you can manage companies:

	1. If needed, edit user information. Select the applicable tab Info, Right or Forms to edit.
	2. If needed, change the user roles.
	3. If needed, delete the company.

5.7 Creating and managing users

Before you set up a project, first you must create new users.

1. Go to the Dashboard (Figure 5-3) and click Users.

The page Search users appears:

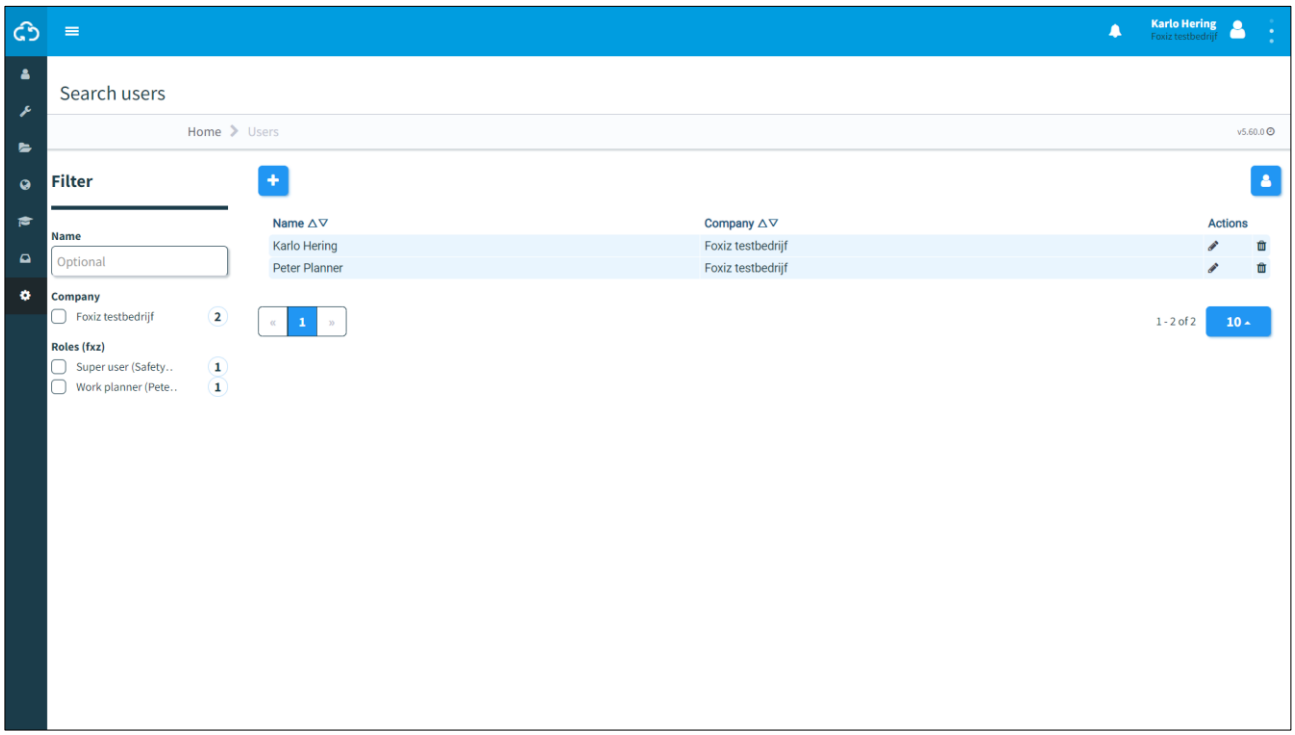

Figure 5-9: Search users

2. Click the icon to start creating a new user.

Follow steps 1 and 2 to create a new user.

5.7.1 Step 1 - Info

In step 1 of creating a user, add the required user information.

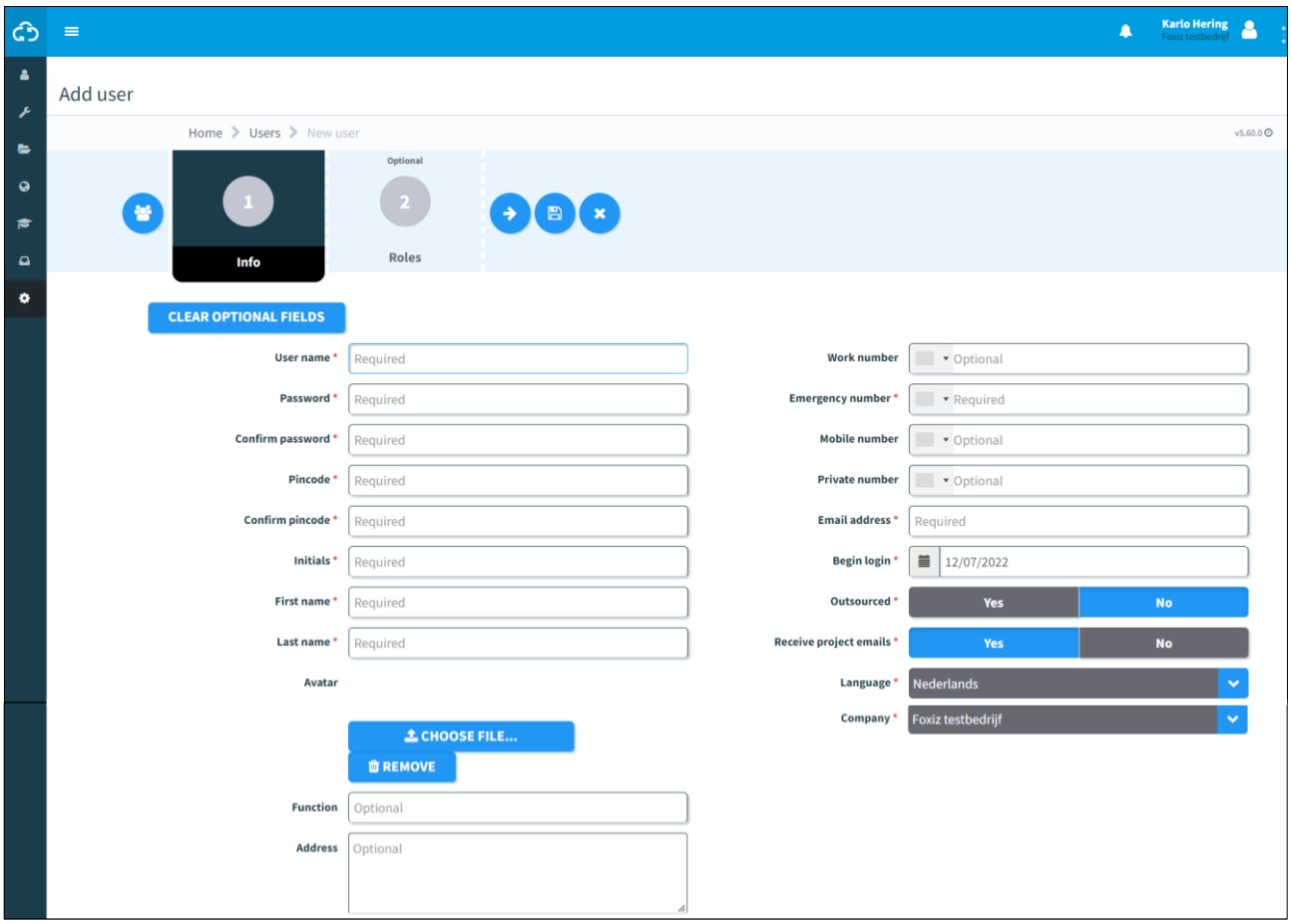

Figure 5-10: Creating users - info

1. Fill out the required fields. Note:
   - the password must have minimal 10 characters;
   - the pin code must have at least 2 unique digits;
   - the emergency number must have at least 7 digits and no spaces;
   - select the country code of telephone numbers.

2. Fill out the optional fields.

3. Upload optionally files (max. 8 MB).

4. Go to step 2.

NOTE
Some steps or fields in MTinfo 3000 are not required and do not have to be filled out to go to the next step. Required fields are marked with a red asterisk (*) and must be filled out to continue. If you forget a field or do not comply with requirements, a pop up will appear showing what needs to be done.

5.7.2 Step 2 - Roles

In step 2 of creating a user, select one or more user roles.

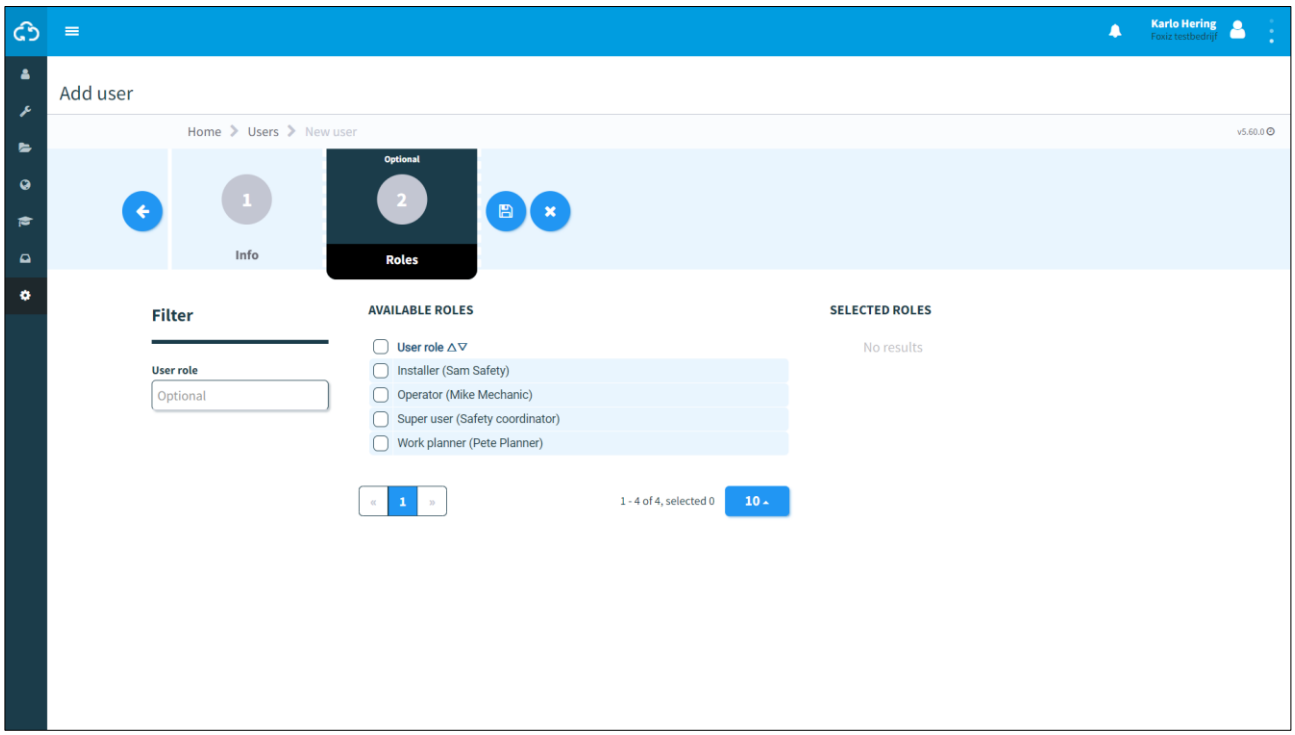

Figure 5-11: Creating users - roles

	1. Select one or more User roles.
←	2. If needed: change any entered data of step 1 before saving the user.
💾	3. Save the user.
✖	4. If needed: cancel the user creation at any point. The entered data will not be saved.

After saving the user, the page View user appears:

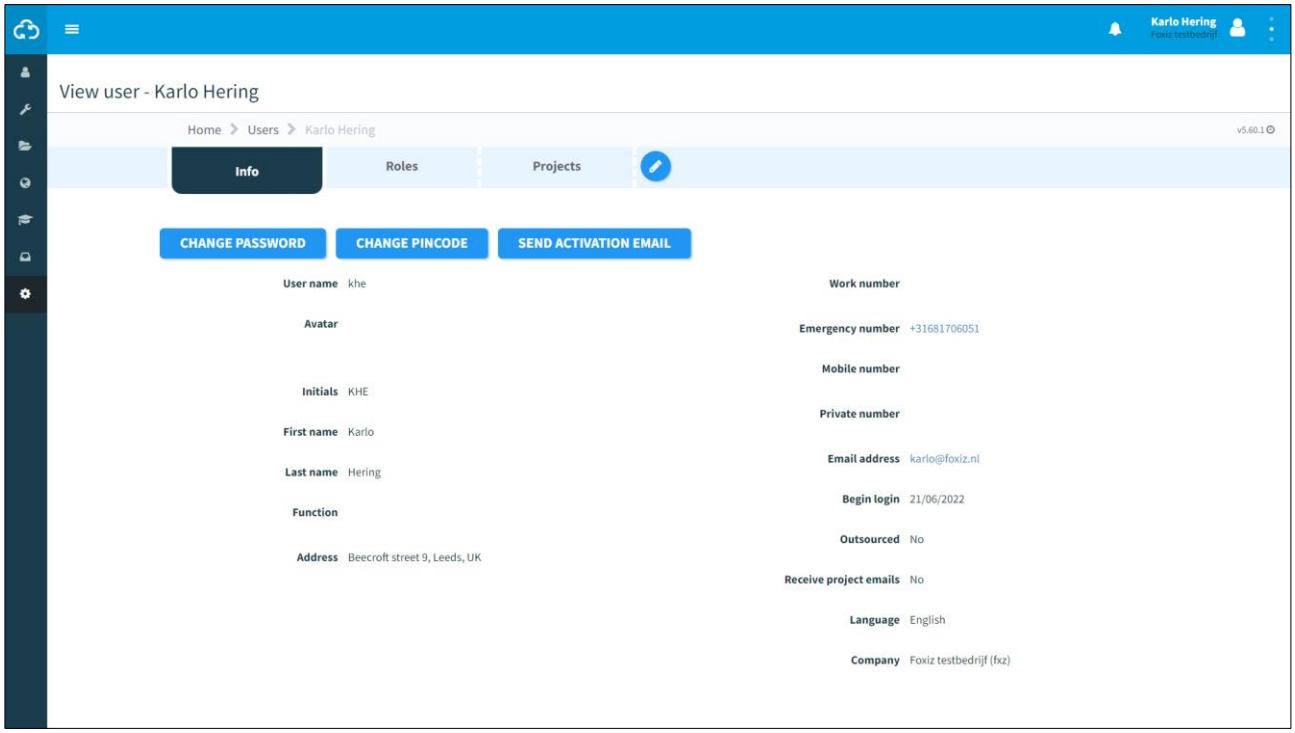

Figure 5-12: View user

From this page, you can manage users:

1. Send an activation email to grant the new user access to MTinfo 3000.
2. If needed, change the user's password or pin code.
3. If needed, edit user information. Select the applicable tab Info, Roles or Projects to edit.

5.8 Search and view projects

From the page Search project, search for existing projects:

1. Go to the Dashboard and click Projects.

The page Search project appears with an overview of the existing projects:

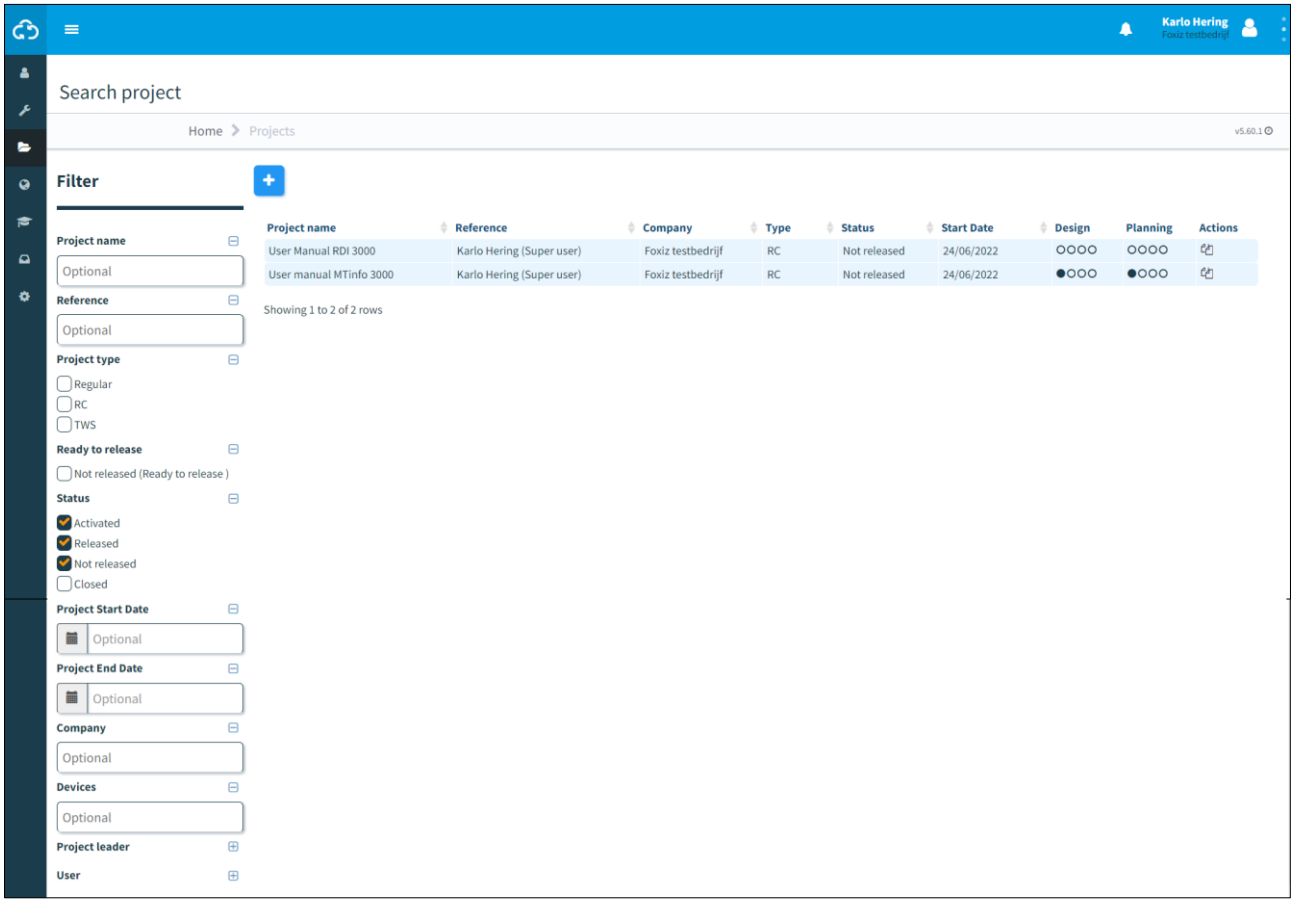

Figure 5-13: Search project

From this page, search, filter and sort projects. On the left side, you see Filter. Enter a project name and/or reference, partially or as a whole. Use filters (project type, ready to release, status, etc.) for effective searching.

Use the arrows to sort projects alphabetically (a-z or z-a).

NOTE
Search, filter and sort are available for many overviews, for example users, reports, etc.

To view an individual project, click the project's row. The page View project appears:

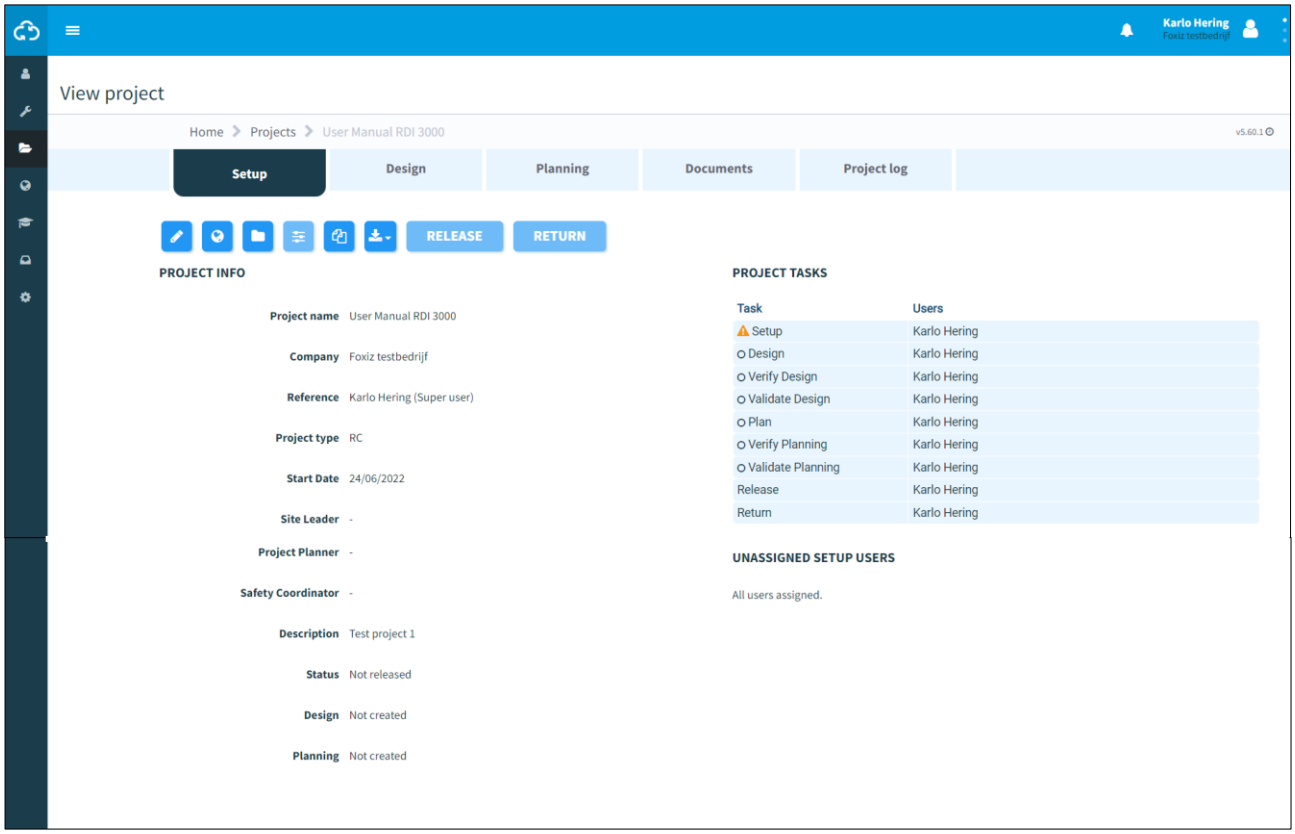

Figure 5-14: View project

From the tab Setup, you have access to several functions for the selected project:

	Edit a project.
	View the real-time status.
	Close a project.
	Switch protection zones (not active).
	Duplicate a project.
	Download a report or document.
RELEASE	Release a project (not active).
RETURN	Return a project (not active).

When a button is not active, it colours light blue. Not active buttons become active (blue) after having performed the applicable actions in MTinfo 3000.

You can also view:

- project details: project name, company, project type, start date, Site Leader, Project Planner, etc. (scroll down to see more);
- the status of project tasks.

Click the icon to go back to the Dashboard.

NOTE
There are different ways to access several functions in MTinfo 3000, for example from the Dashboard or the page View project. Not all different ways are discussed in this manual. You will learn by doing and finding your own way in MTinfo 3000.

6 CREATE PROJECTS

This section explains how to create MTinfo 3000 projects. A project allows you to easily set up, design, plan and control protection zones.

6.1 Setup projects

Before you set up a project, first create a new project:

	1. Go to the Dashboard.
	2. Click on Projects to access the page Search projects (Figure 5-13).
	3. Create a new project.
	4. Start the setup.

The page Setup project (Figure 6-1) appears. Follow steps 1 to 3 to setup a new project.

6.1.1 Step 1 - Project info

In step 1 of the project setup, add the applicable project information.

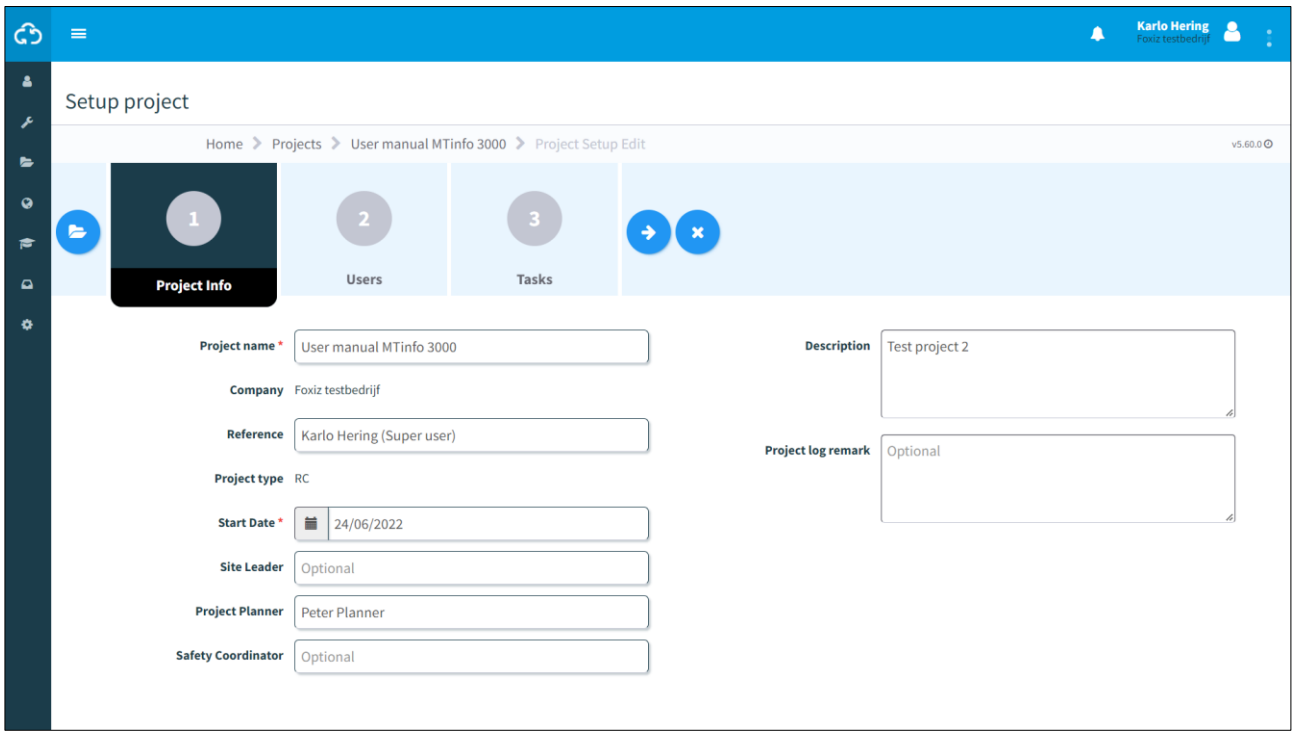

Figure 6-1: Setup project - project info

1. Fill in a Project name.
2. Optional: add a Reference.
3. Select **RC** as Project type.
4. Fill in the Start date (this date is just used as an indication to know when the project is planned to start but does not actually do anything).
5. Optional: add a Site Leader.
6. Optional: add a Project Planner.
7. Optional: add a Safety Coordinator.
8. Optional: add a Description.
9. Optional: add a Project log remark.
10. Go to step 2.

6.1.2 Step 2 - Users

In step 2 of the project setup, select the project users (planners).

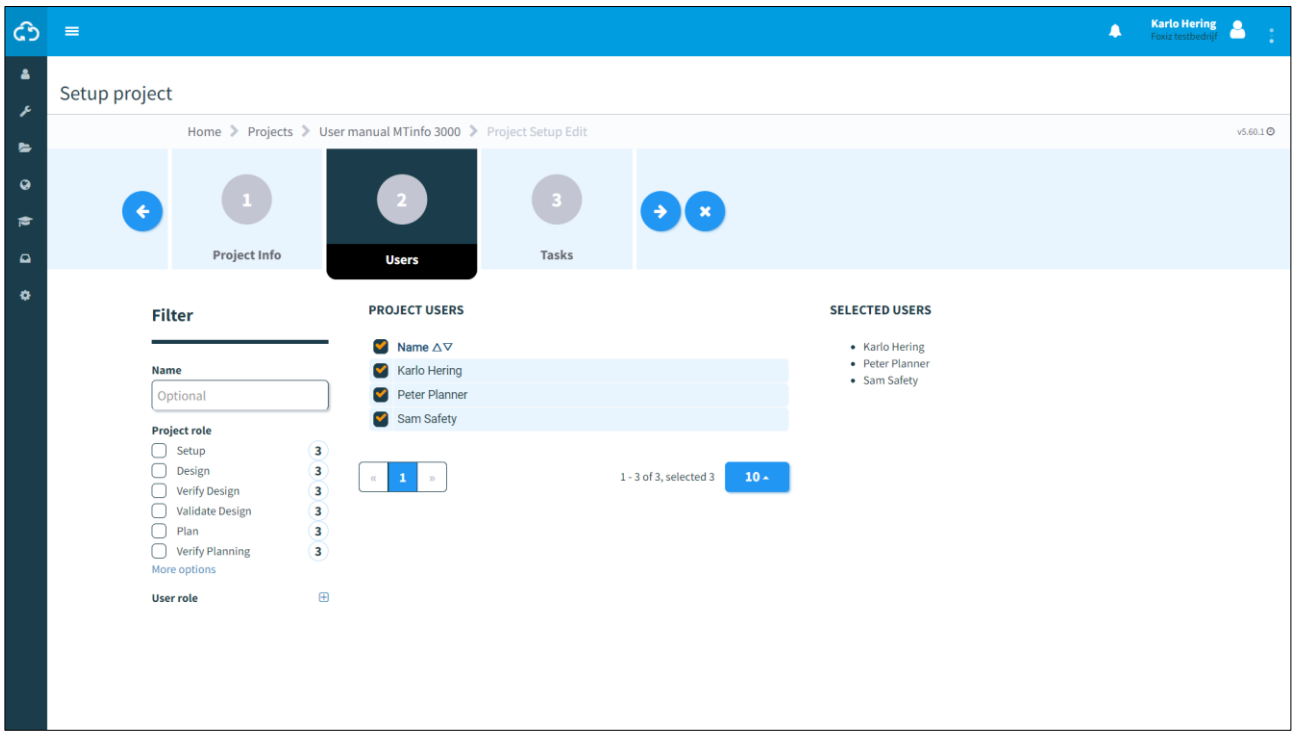

Figure 6-2: Setup project - users

1. Select the project users.
2. Go to step 3.

6.1.3 Step 3 - Tasks

In step 3 of the project setup, connect the project users and tasks.

WARNING
Never assign a single project user to all tasks. Verification and validation should be independent from the project design and planning. MTinfo 3000 recommends to assign at least two users to the setup stage.

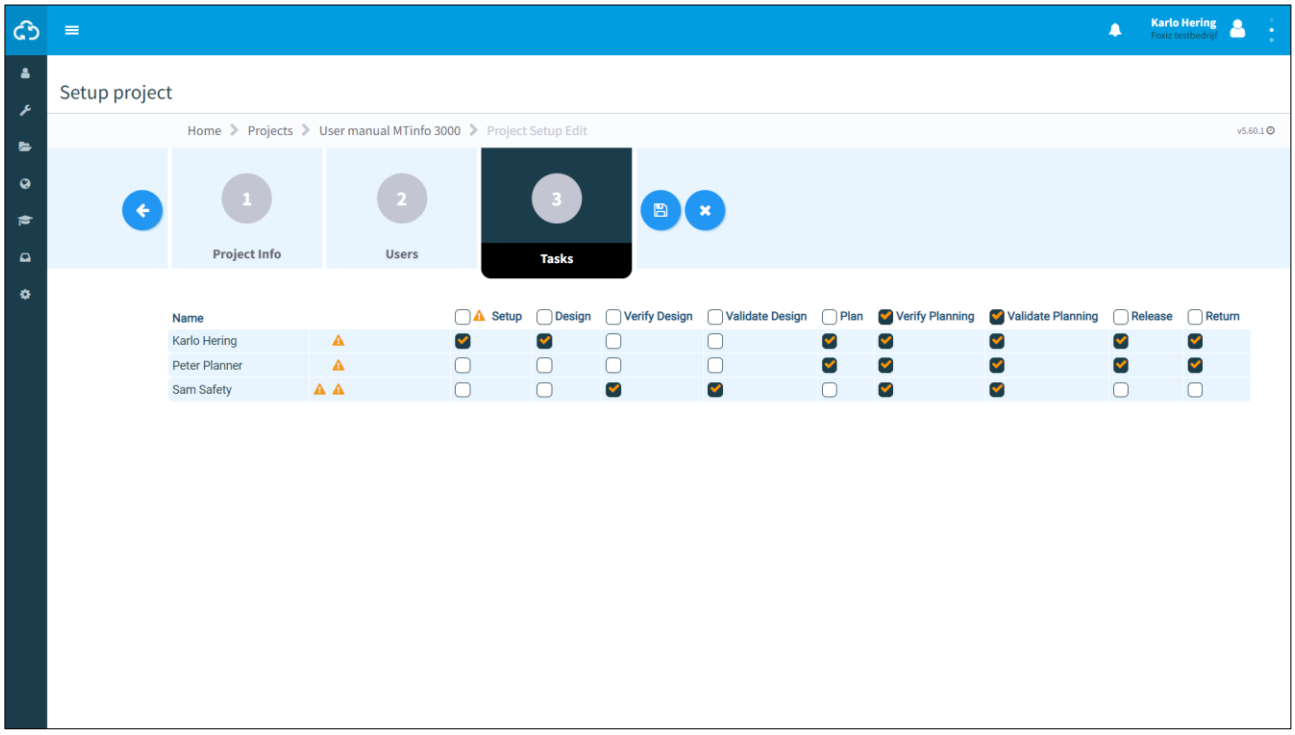

Figure 6-3: Setup project - tasks

1. Assign the project users to their tasks.
2. If needed: change any entered data of the previous steps before saving the project setup.
3. Save the project setup.
4. If needed: cancel the project setup at any point. The entered data will not be saved.

6.2 Design projects

Design projects is used to create protection zones and assign devices to them.

1. Go to the page View project (Figure 5-14).
2. Click the tab Design for access to the steps of the project design.
3. Start the design.

The page Design projects (Figure 6-4) appears. Follow steps 1 to 4 to design the project.

6.2.1 Step 1 - Devices

In step 1 of the project design, select which devices are to be switched on the project. Only switchable devices are displayed.

WARNING
Make sure that the devices on the project are located at the correct location in the track. Do not do this via the GPS tracking but check the actual position in the track.

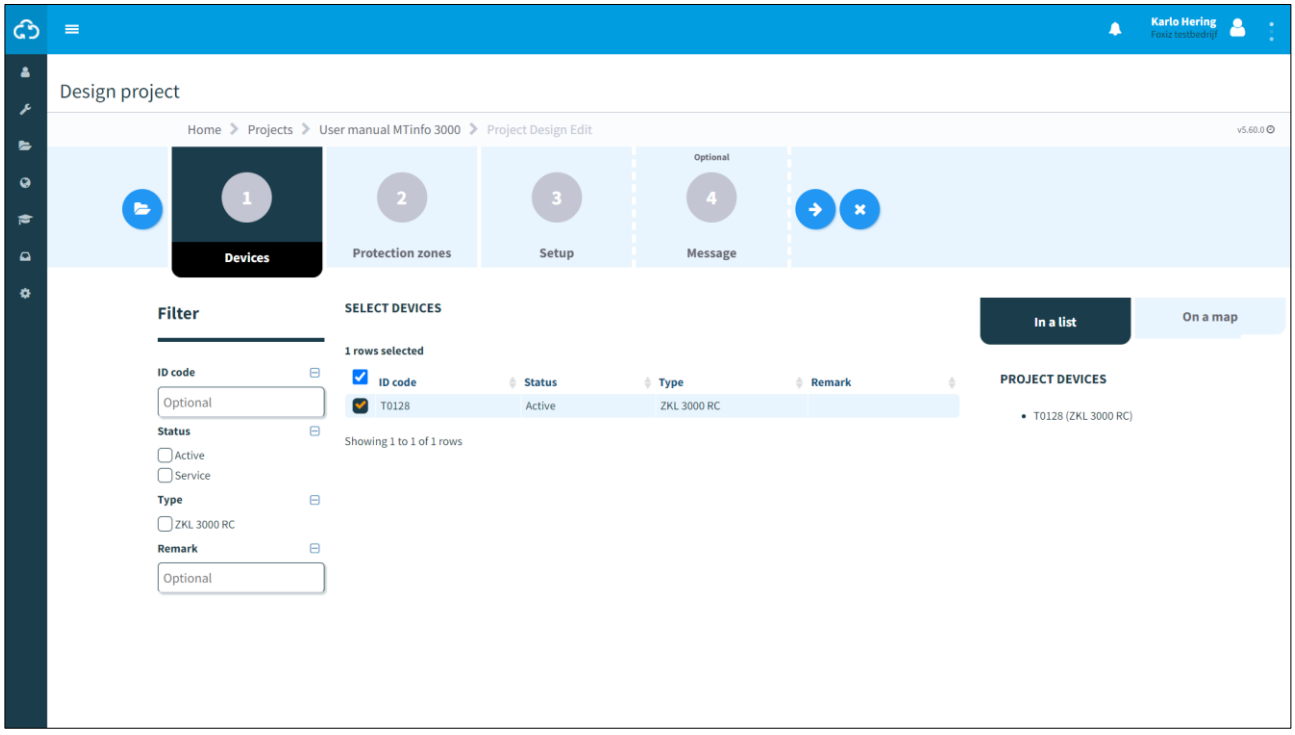

Figure 6-4: Design project - devices

1. Select the devices to be switched. See the selected devices on the right side of this screen: In a list or On a map.
2. Go to step 2.

6.2.2 Step 2 - Protection zones

In step 2 of the project design, create protection zones.

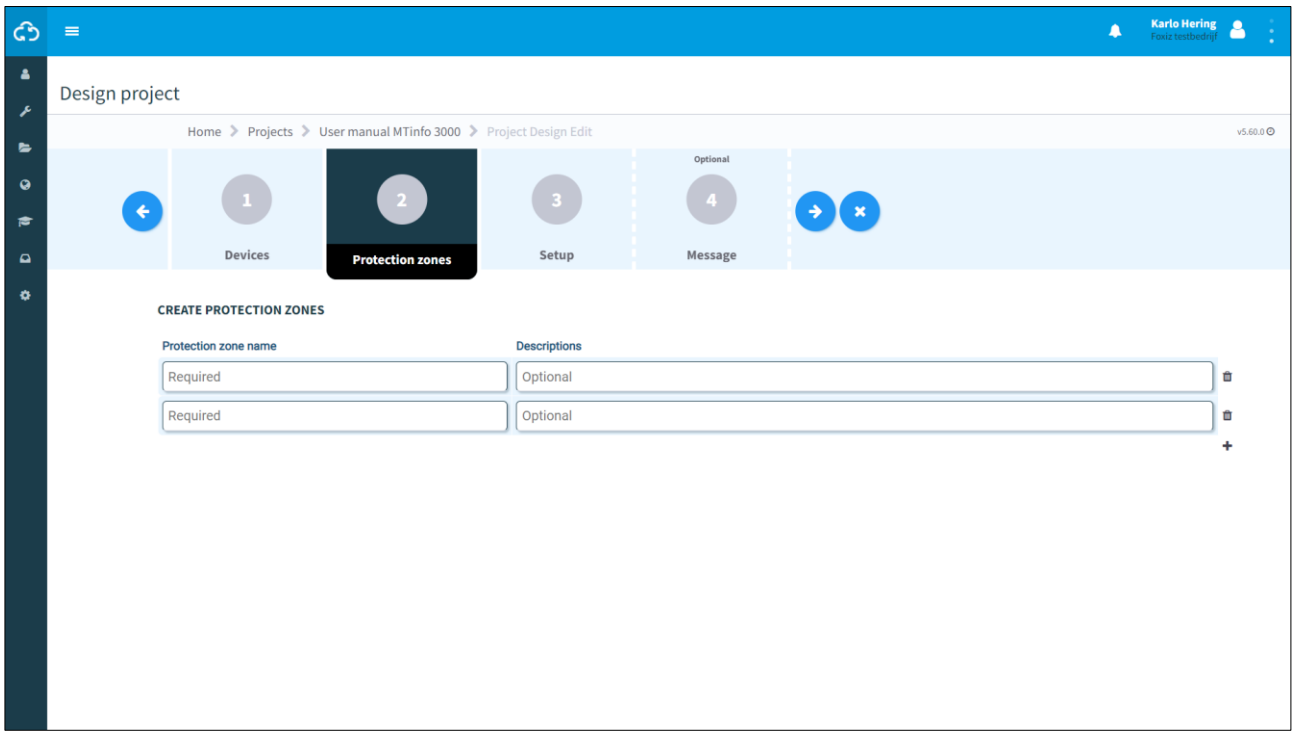

Figure 6-5: Design project - protection zones

+	1.	Create one or more protection zones.
	2.	Fill in a Protection zone name. The name must be unique within the project.
	3.	Optional: fill in a Description.
→	4.	Go to step 3.

6.2.3 Step 3 - Setup

In step 3 of the project design, link the selected devices (step 1) and protection zones (step 2).

NOTE
It is not possible within a project to add the same device to two protection zones.

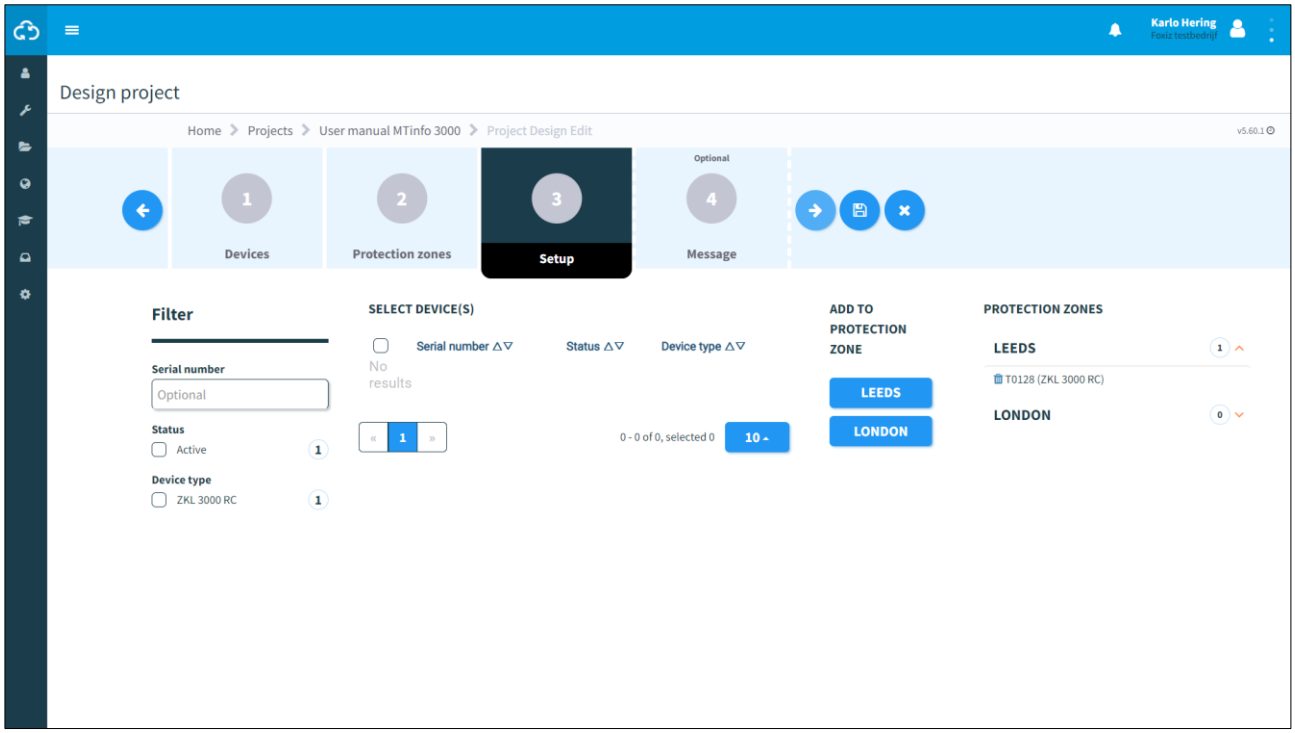

Figure 6-6: Design project - setup

1. Select one or more devices.
2. Click the button with the name of the protection zone to add the selected devices to the protection zone. At the right-side, see an overview of the linked devices and protection zones.
3. If needed: remove a device from the linked protection zone.
4. Go to step 4.

6.2.4 Step 4 - Message

In the optional step 4 of the project design, messages can be added. They will be displayed when a user opens protection zones in the app.

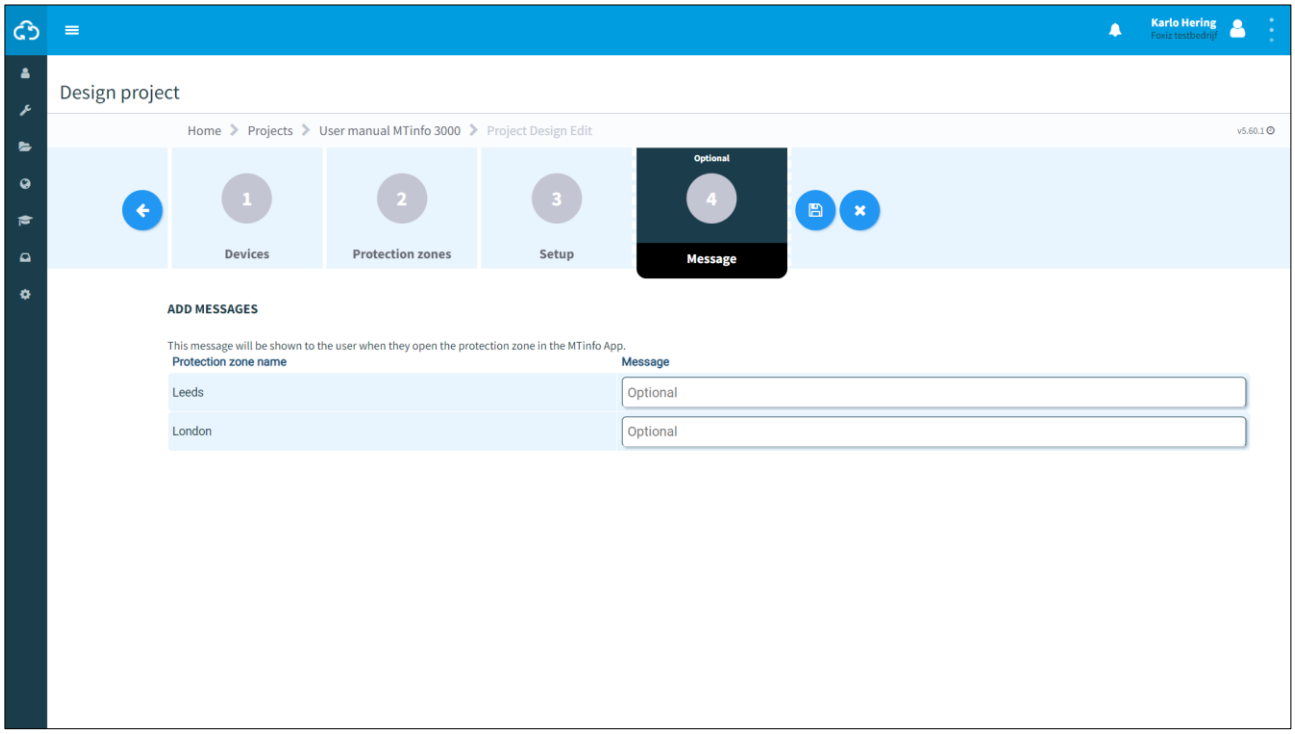

Figure 6-7: Design project - message

1. Optional: add a message to each Protection zone name.

The last step is to save the project design (see 6.2.5).

6.2.5 Save project design

Save the project design before starting the verification and validation. Or verify and validate the project design directly (see 6.4).

NOTE
To reduce risks, MTinfo 3000 uses the six-eyes principle. It is strongly recommended that a second authorized user should verify the design and a third authorised user should validate the design.

NOTE
You can verify and validate the design directly if you are authorized. Because of the six-eyes principle, Dual Inventive does not recommend this step in operational use.

1. Click the icon (see Figure 6-7).

This screen appears:

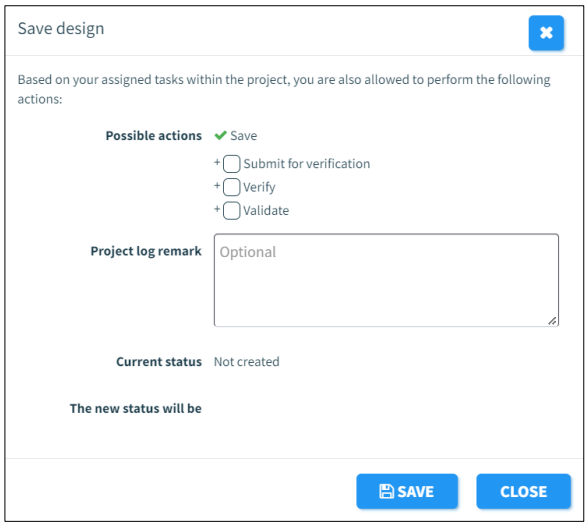

Figure 6-8: Save design

2. Tick the box Submit for verification. Authorised project users will be assigned to the task Verify project in My MTinfo.
3. Tick the box Verify if you want to verify the project design directly.
4. Tick the box Validate if you want to validate the project design directly.
5. Optional: add a Project log remark. This will be shown in the Project log (see 10.4).
6. If needed: change any entered data before saving the design as final. Click on any of the previous steps and change the data accordingly.
7. Save the project design.

6.3 Plan projects

Plan projects is used to assign project users to protection zones which they are allowed to switch.

1. Go to the page View project (Figure 5-14).
2. Click the tab Planning for access to the steps of the project planning.
3. Start the project planning.

The page Plan project (Figure 6-9) appears. Follow steps 1 to 6 to plan the project.

6.3.1 Step 1 - Switch users

In step 1 of the project planning, select the switch users.

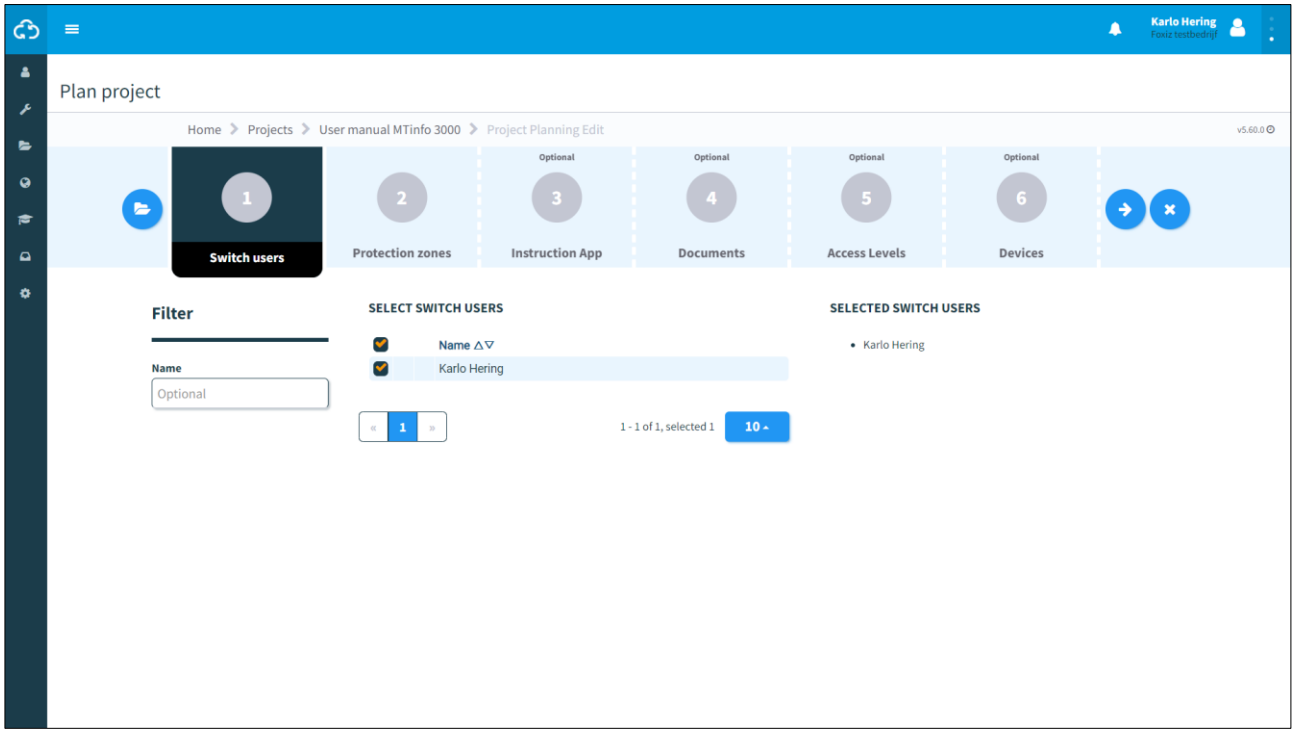

Figure 6-9: Plan project - switch users

1. Select the Switch users that are allowed to switch protection zones.
2. Go to step 2.

NOTE

This icon shows users without access to the app or rights to view the project in MTinfo 3000. Users without switching rights are not shown in this step to begin with.

6.3.2 Step 2 - Protection zones

In step 2 of the project planning, assign the selected switch users (step 1) to the protection zones they are allowed to switch. The period wherein the switch users can switch the protection zone, can be determined in this step.

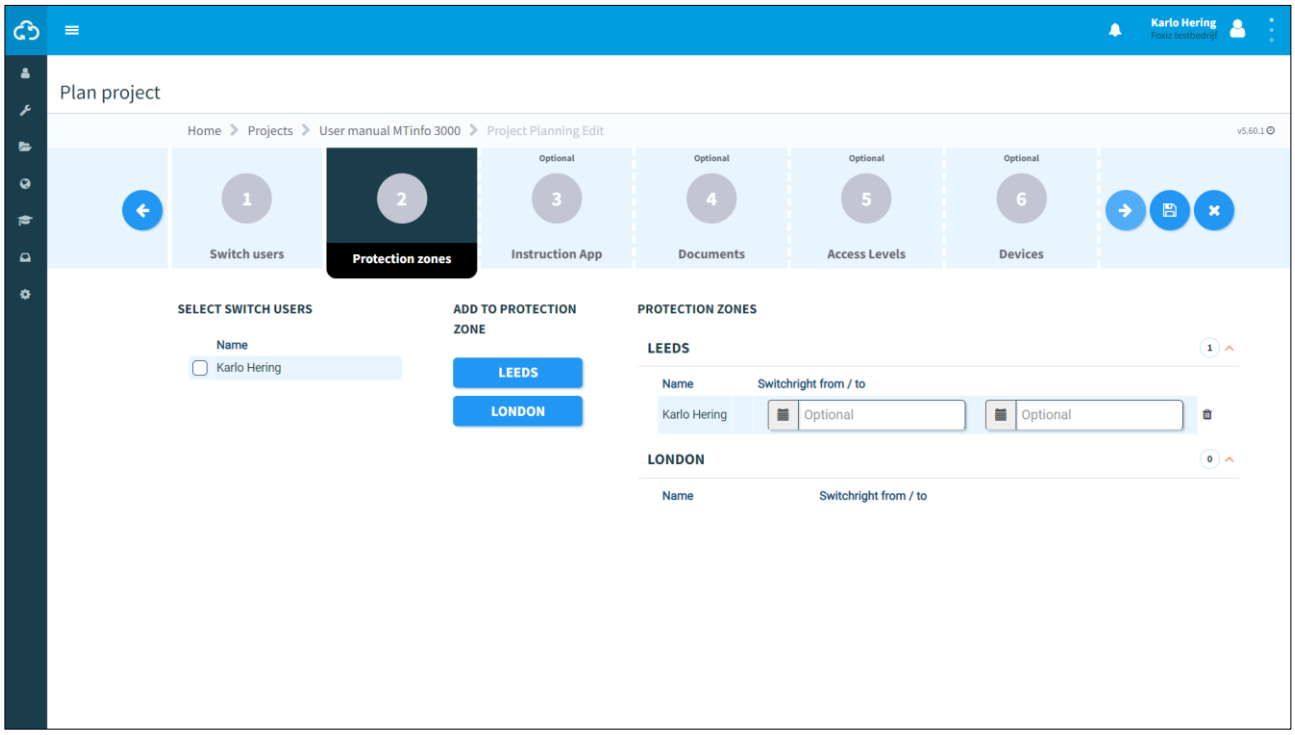

Figure 6-10: Plan project - protection zones

1. Select one or more switch users.
2. Add switch users to the protection zone by clicking the button(s) with the name(s) of the protection zone(s). On the right side, the period for switching appears.
3. If needed: remove a user from a protection zone.
4. Optional: fill in the period (from/to). Switch users can only switch the protection zone within this period. If the fields are kept empty, switch users are not limited, in that case protection zones can be switched by the assigned user(s) until the project is returned.
5. Go to step 3.

6.3.3 Step 3 - Instruction app

In the optional step 3 of the project planning, switch users are automatically selected. This step serves to select the non-switch users who need access to documentation. The instruction tile of the app tile contains all relevant instructions for the project.

NOTE
If switch users are assigned to protection zones within a switching period, they cannot be deselected.

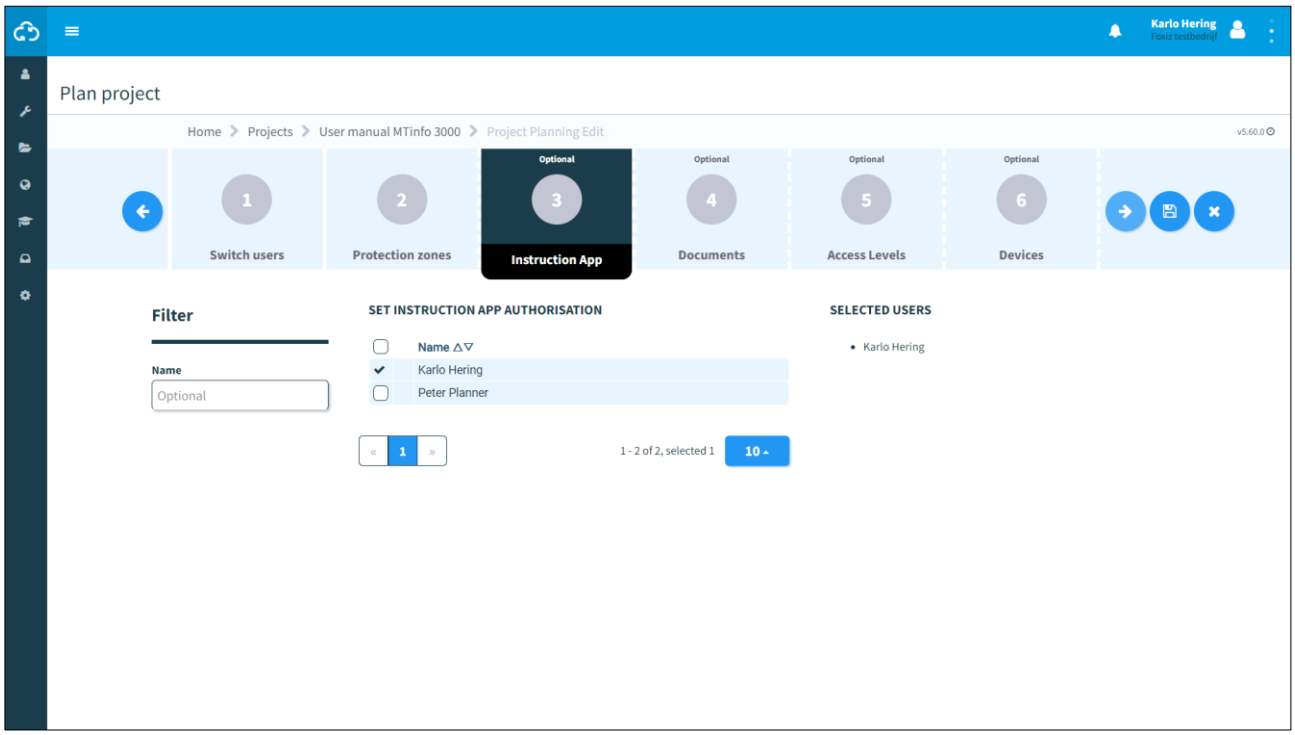

Figure 6-11: Plan project - instruction app

1. Select the users who need access to the instruction tile of the app.
2. Go to step 4.

6.3.4 Step 4 - Documents

In the optional step 4 of the project planning, upload documents that users can consult through the instruction tile of the app.

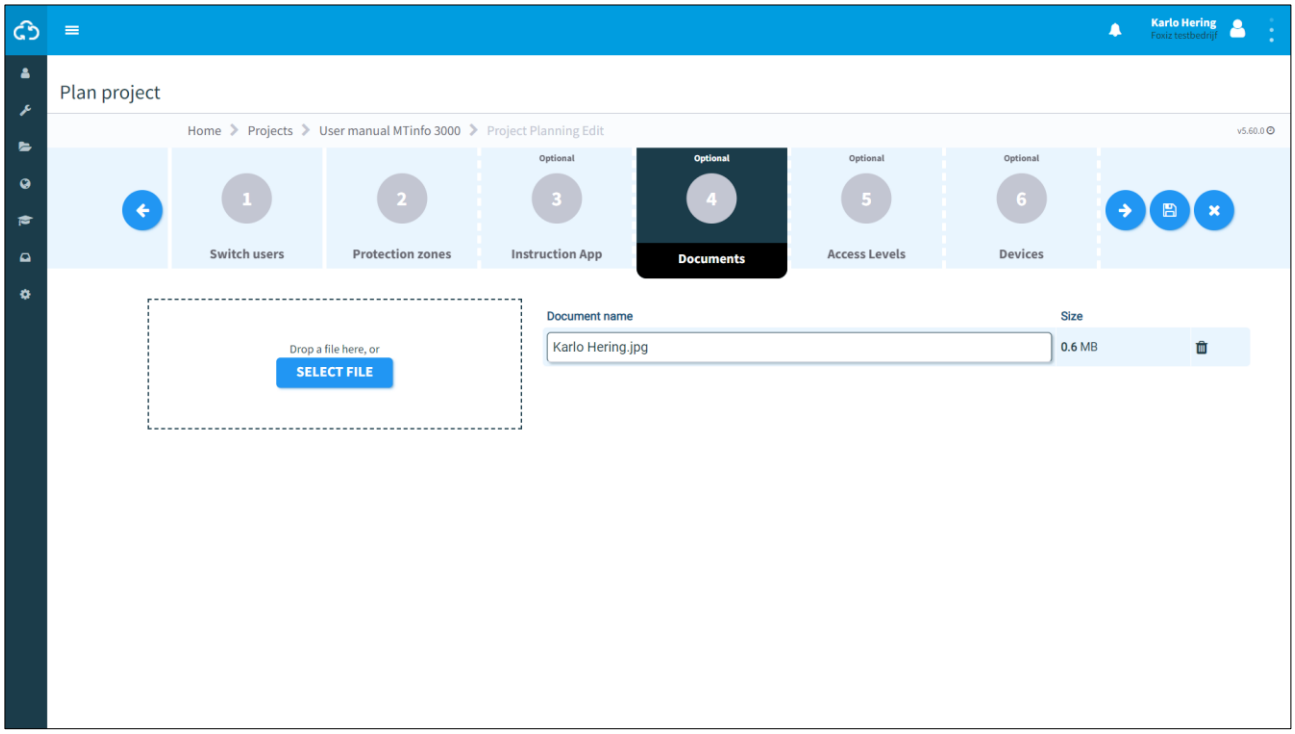

Figure 6-12: Plan project - documents

1. Upload one or more documents by dropping them into the indicated box or select files (max. 8 MB) manually. The names of the uploaded files appear after uploading.
2. If needed: change Document names.
3. If needed: delete files.
4. Go to step 5.

6.3.5 Step 5 - Access levels

In the optional step 5 of the project planning:

- determine the user authorisation;
- determine the document authorisation levels;
- add users to the documentation mailing list.

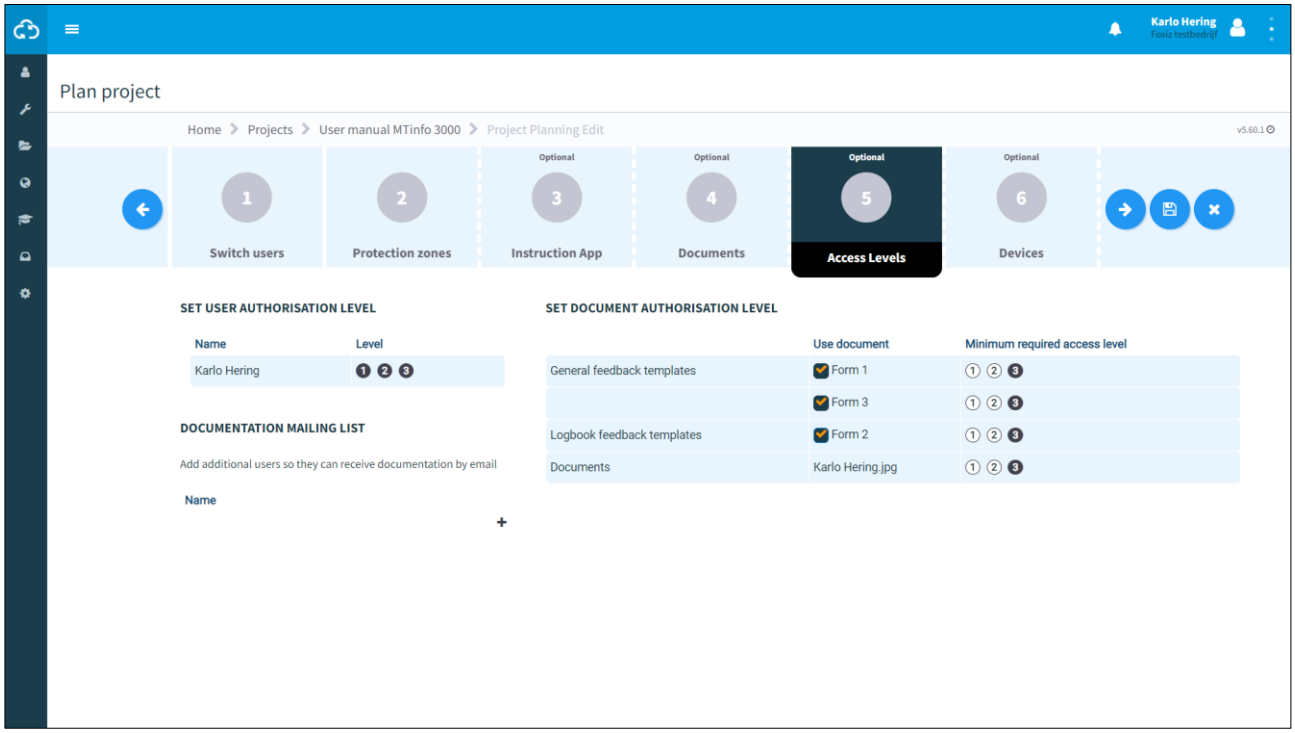

Figure 6-13: Plan project - access levels

The black coloured numbers determine the authorization levels:

❶ ② ③	Only users with level 1 have access to documents.
① ❷ ③	Only users with level 1 and 2 have access to documents.
① ② ❸	All users have access to documents.

1. Set the User authorisation level by clicking the level.
2. Set the Document authorisation level by clicking the level.
3. Optional: add users to the Documentation mailing list.
4. Go to step 6.

6.3.6 Step 6 - Devices

NOTE
This optional step 6 of the project planning is currently being decommissioned; you can skip this step.

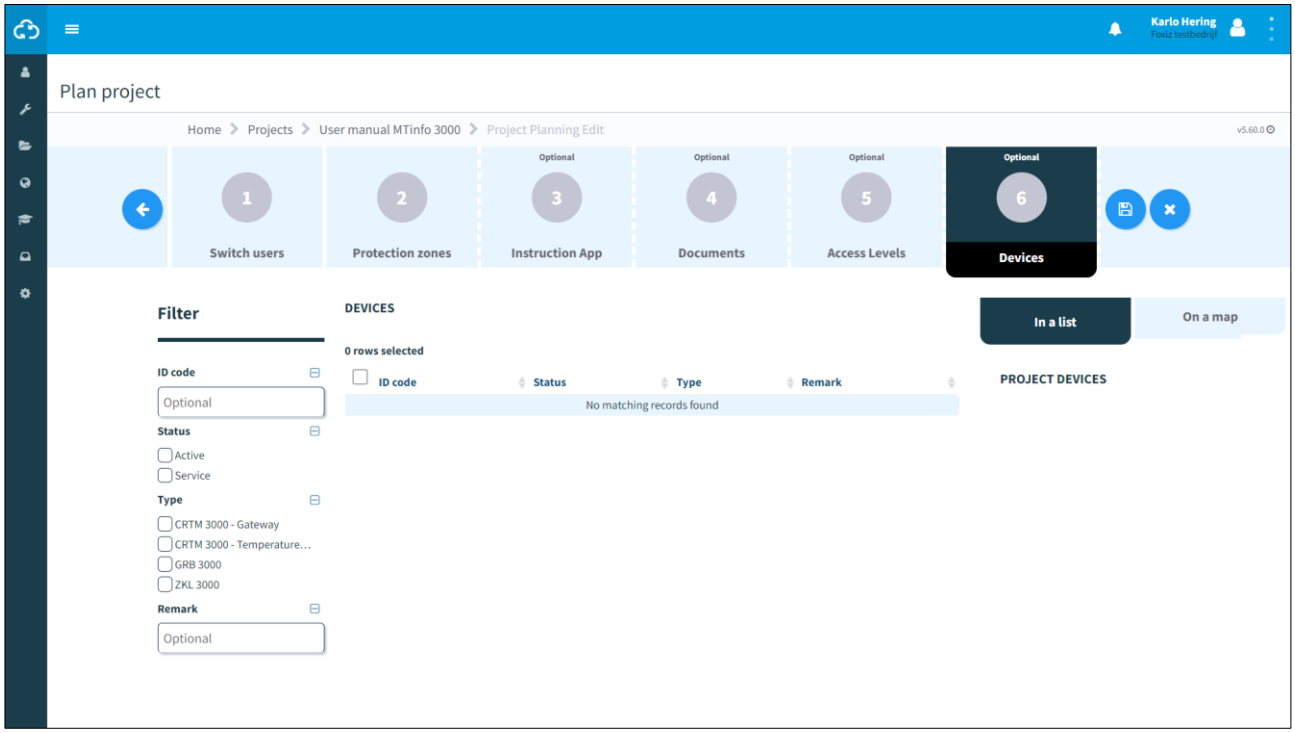

Figure 6-14: Plan project - devices

The last step is to save the project planning.

6.3.7 Save project planning

Save the project planning and submit it for verification or validation. Or verify and validate the project planning directly (see 6.4).

NOTE
To reduce risks, MTinfo 3000 uses the six-eyes principle. It is strongly recommended that a second authorised user should verify the planning and a third authorised user should validate the planning.

NOTE
You can verify and validate the planning directly if you are authorised. Because of the six-eyes principle, Dual Inventive does not recommend this step in operational use.

1. Save (see Figure 6-14).

This screen appears:

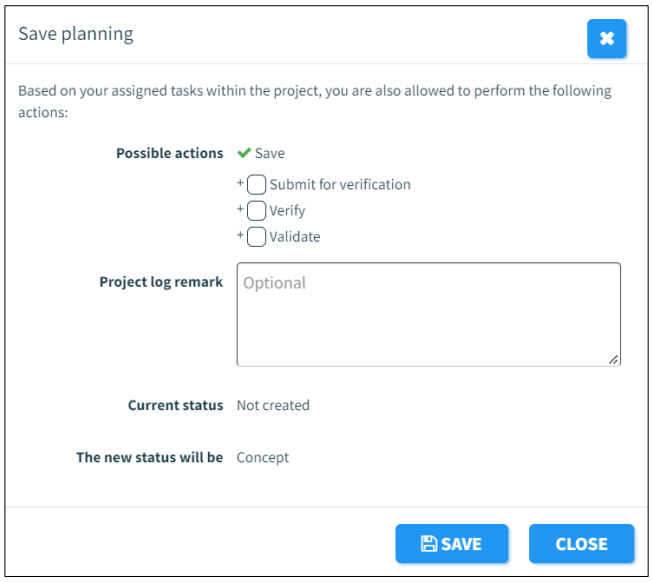

Figure 6-15: Save planning

Saving the project planning works similar as saving the project design (see 6.2.5).

6.4 Verification and validation

To utilise the six-eyes principle in MTinfo 3000, at least three people need to check both the project design and the project planning before releasing projects. When a project is ready to be verified or validated, My MTinfo shows the applicable actions to be performed.

1. Go to the Dashboard and go to My MTinfo (on the right side, see Figure 5-3) which shows an overview of the assigned tasks in MTinfo 3000.
2. Click the task Verify or Validate.

The page View project appears. Depending on the task, the tab Design or tab Planning is selected:

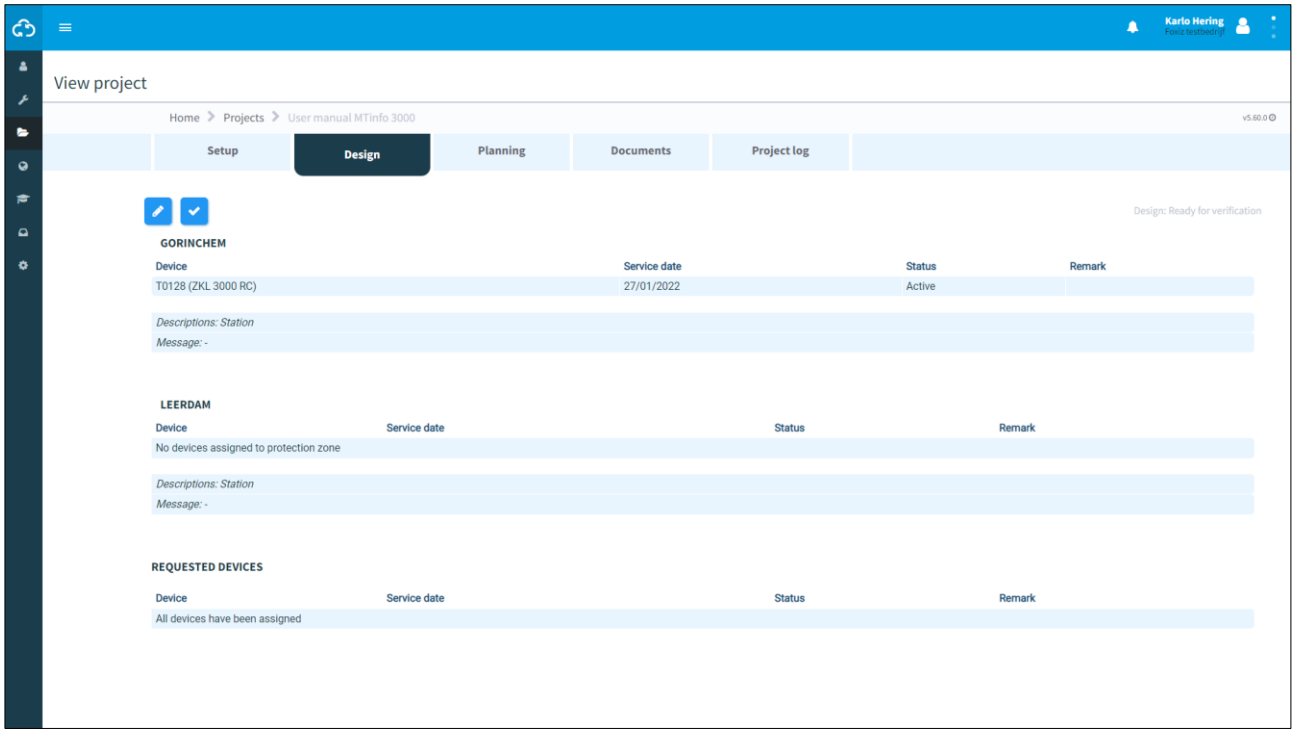

Figure 6-16: View project - verify and validate

3. Click the icon.

Depending on the task, the screen Check design or Check planning appears:

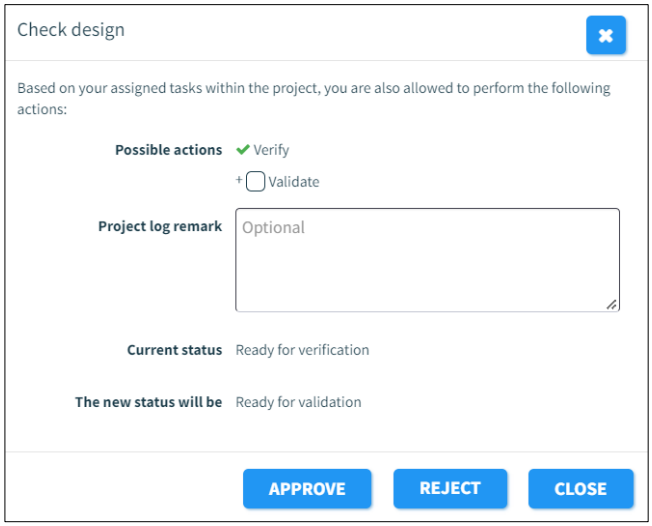

Figure 6-17: Check design

4. Optional: fill in a reason in the field Project log remark.
5. Click to approve or reject the validation or verification.

7 RELEASE, RETURN AND CLOSE PROJECTS

Once MTinfo 3000 projects have been set up, designed and planned, projects must be released before they can be operational. Return and close are two more functions for managing projects.

NOTE
For safety reasons, you can only change a project when it is not released. To change a released project, first it needs to be returned (see 7.2).

7.1 Release

When a project is released, the assigned devices are locked to the project. They cannot be used simultaneously on different (released) projects.

To release a project:

1. Go to the page View project (Figure 5-14), tab Setup.

RELEASE 2. Click the button.

This screen appears:

Figure 7-1: Release - start

RELEASE 3. Click this button.

MTinfo 3000 performs several checks before releasing a project:

Figure 7-2: Release - finished

Table 7-1 explains the checks:

CHECK	EXPLANATION
Planning	Checking the project planning.
Design	Checking the project design.
Device availability	Checking the device availability.
Request release	Checking if the project can be released.
Project released	The project is released.
Inform users	Informing the project users through e-mails and push notifications that a project has been released.

Table 7-1: Checks before releasing

When a check is successful, a green checkmark appears next to it. When a check is not successful, a red cross appears in front of the specific step with its cause. Resolve the problem:

CHECK	PROBLEM	SOLUTION
Planning	The project planning is not completed. The planning is not verified and/or validated.	Complete the project planning. Verify and/or validate the project planning.
Design	The project design is not completed. The design is not verified and/or validated.	Complete the project design. Verify and/or validate the project design.
Device availability	The device is not available because of several reasons, e.g., the device is defect, empty batteries.	Check the real-time status of the device and resolve the problem.
Request release	The project cannot be requested for release for many reasons like: • the secure server is down; • the device is used in other projects; • the device has errors.	Check if the device is not used in any other projects. Check if the device does not have any errors or else contact Dual Inventive to resolve the issue.

CHECK	PROBLEM	SOLUTION
Project released	The project cannot be released.	A project cannot be released when one or more devices are offline. Please check the device's batteries and reset the device. If this does not solve the issue, contact Dual Inventive.
Inform users	Users may not receive any push notifications, SMS or email when the project has been released.	Check if the correct phone number and email is filled in. Also check if the push and email notifications are turned on to receive notifications. If so, then contact Dual Inventive.

Table 7-2: Troubleshooting while releasing

Once the problem has been solved, attempt to release the project again. When all checks are successful, the project is released. All project users receive an e-mail and a push notification through the app.

7.2 Return

If you want to end or edit a released project, first it must be returned. This is for safety reasons and it prevents that devices are used simultaneously on multiple projects. As soon as a project has been returned, the devices can be released on other projects.

NOTE
After returning a project, users cannot switch protection zones on the project anymore. Any devices that have been switched on, will remain switched on even after the project is returned.

1. Go to the page View project (Figure 5-14), tab Setup.

RETURN 2. Click the button.

This screen appears:

Figure 7-3: Return - start

RETURN 3. Click this button.

MTinfo 3000 performs again several checks before returning a project:

Figure 7-4: Return - finished

When a check is successful, a green checkmark appears next to it. When a check is not successful, a red cross appears in front of the specific step with its cause. This will normally not happen because you can return a device in most circumstances, even when a battery is empty. When a red cross appears, please follow the section trouble shooting in the user manual of your device. If that does not help, please contact Dual Inventive.

When all checks are successful, the project is returned. All project users receive an e-mail and a push notification. If the project cannot be returned, MTinfo 3000 will notify the user who is trying to return the project.

7.3 Close

Once a project has been completed, it remains on your list of available projects, so you can release a project again. If you want to delete projects on your list, close the project. It is only possible to close a project when it is not released.

NOTE
Closing a project is irreversible. Be aware that a closed project can still be duplicated (see Figure 5-14).

To close a project:

1. Go to the page View project (Figure 5-14), tab Setup.
2. Click the icon.

This screen appears:

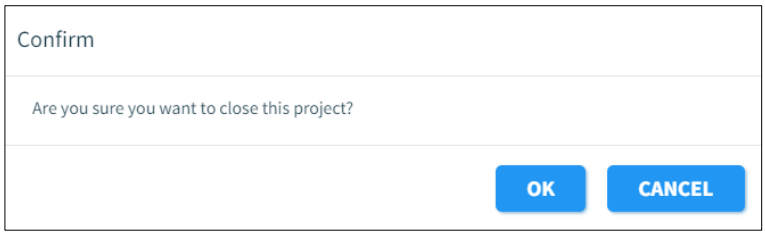

Figure 7-5: Close

3. Click OK to close the project permanently.

Closed project can be viewed for reference when you change your filter to 'closed' (see Figure 5-13).

8 SWITCH PROTECTION ZONES

Switch protection zones remotely through the MTinfo 3000 web interface and the app. For remote switching, you must be authorised. This section explains how to select and switch protection zones through the MTinfo 3000 web interface.

NOTE
For switching protection zones through the app, refer to the User manual MTinfo 3000 app.

1. Go to the page View project (Figure 5-14), tab Setup.
2. Click the icon.

The page Switch protection zone(s) (Figure 8-1) appears. Follow step 1 and 2 to select and switch protection zones.

8.1 Step 1 - Protection zone

In the first step, select the protection zone(s) to switch.

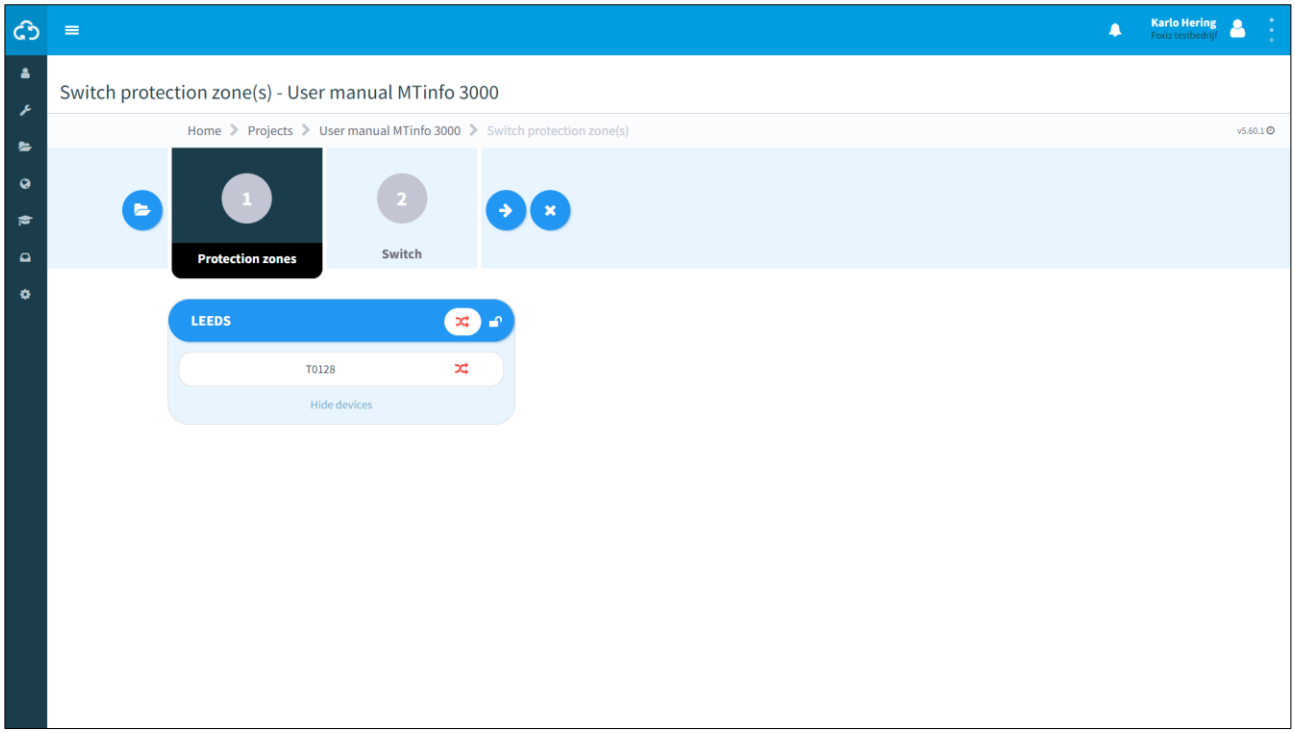

Figure 8-1: Switching protection zone(s) - protection zones

1. Select the protection zones to switch.

The green shift symbol means that the protection zone has been switched. The red shift symbol means that the protection zone has not been switched yet.

NOTE
It is possible to switch multiple protection zones at once if you are authorised on company level. By default, only one protection zone can be switched each time.

In the case that you want to switch multiple protection zones at once, and one or more protection zones do not react, for example because of a temporary connectivity problem, it is possible to switch on a protection zone that is already on and vice versa.

2. Go to step 2.

8.2 Step 2 - Switch

In the second step, choose to turn the devices on (switchable) or off (not switchable).

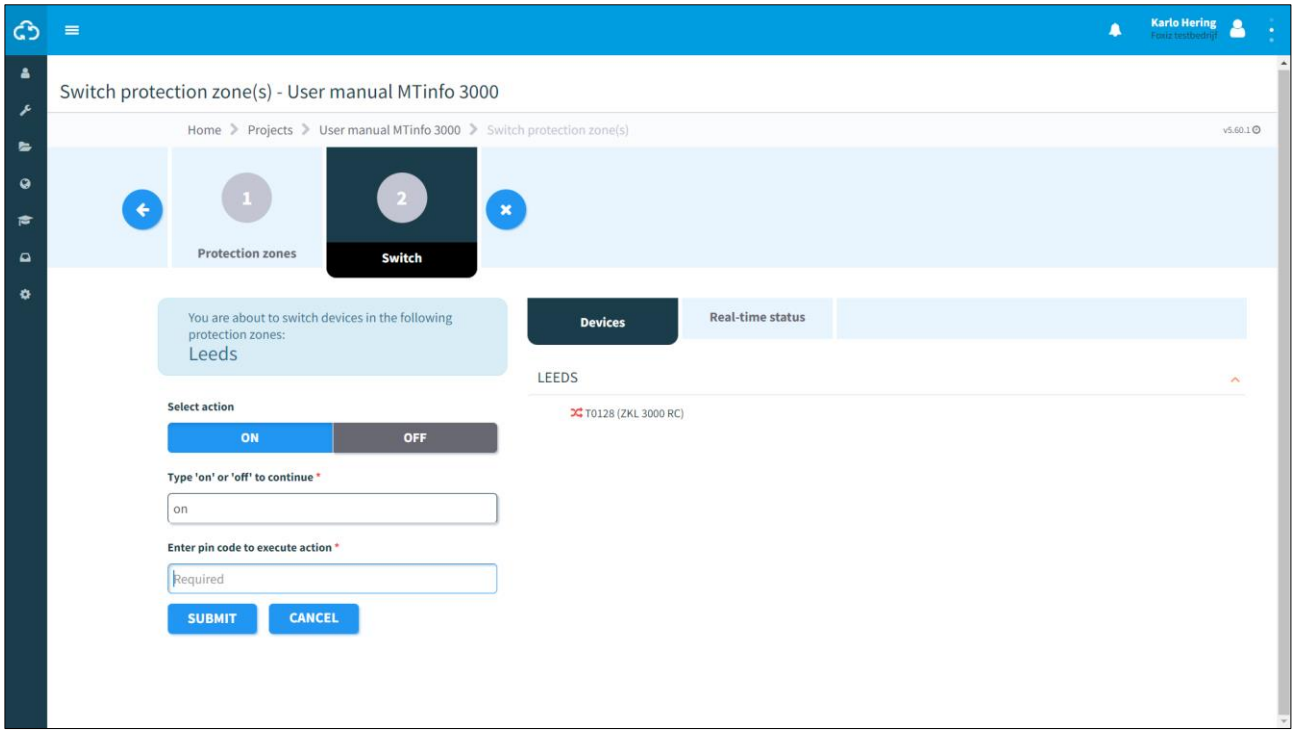

Figure 8-2: Switching protection zone(s) - switch

1. Select: ON or OFF
2. Type: on or off.
3. Enter your PIN code.
4. Submit.

On the right side, you see below the tab Devices whether the action was successful or not. You can also see this by opening the tab Real-time status (see 10.1).

When a switch action fails, warnings (Figure 8-3) or an error (Figure 8-4) will be shown.

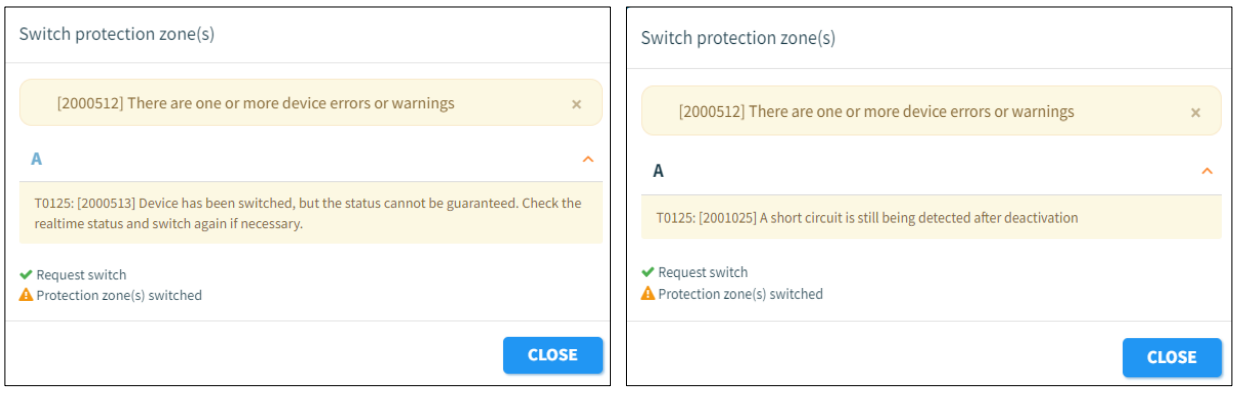

Figure 8-3: Warnings

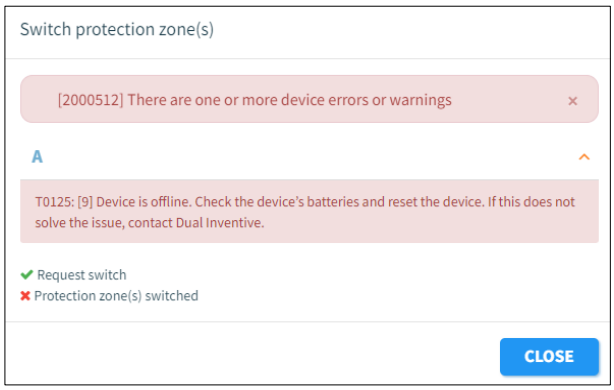

Figure 8-4: Error

9 REPORTS

MTinfo 3000 can generate different types of reports. Reports provide insights into the measured detection, location, battery levels of the devices, etc.

There are two types of reports:

- periodically generated reports (periodical);
- one-time generated reports (once).

The user must generate both types of reports.

9.1 Periodical reports

This section explains how to generate a periodical report. As an example, a Devices report is generated.

1. Go to the Dashboard and click Reports.

The page Reports appears:

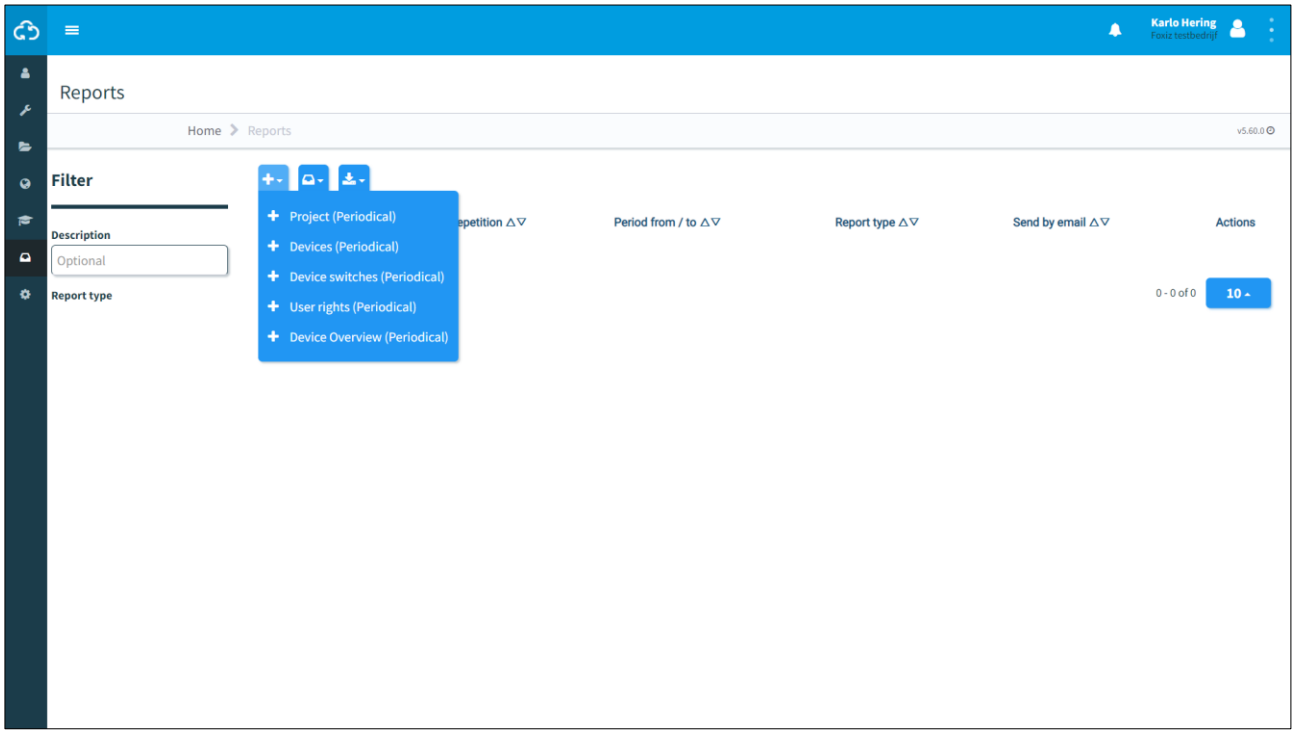

Figure 9-1: Reports - periodical

2. Click the + icon.
3. Select Devices (Periodical).

The page View Report (Figure 9-2) appears. Follow steps 1 to 5 to generate a report.

9.1.1 Step 1 - Report info

In step 1 of generating a report, add basic information.

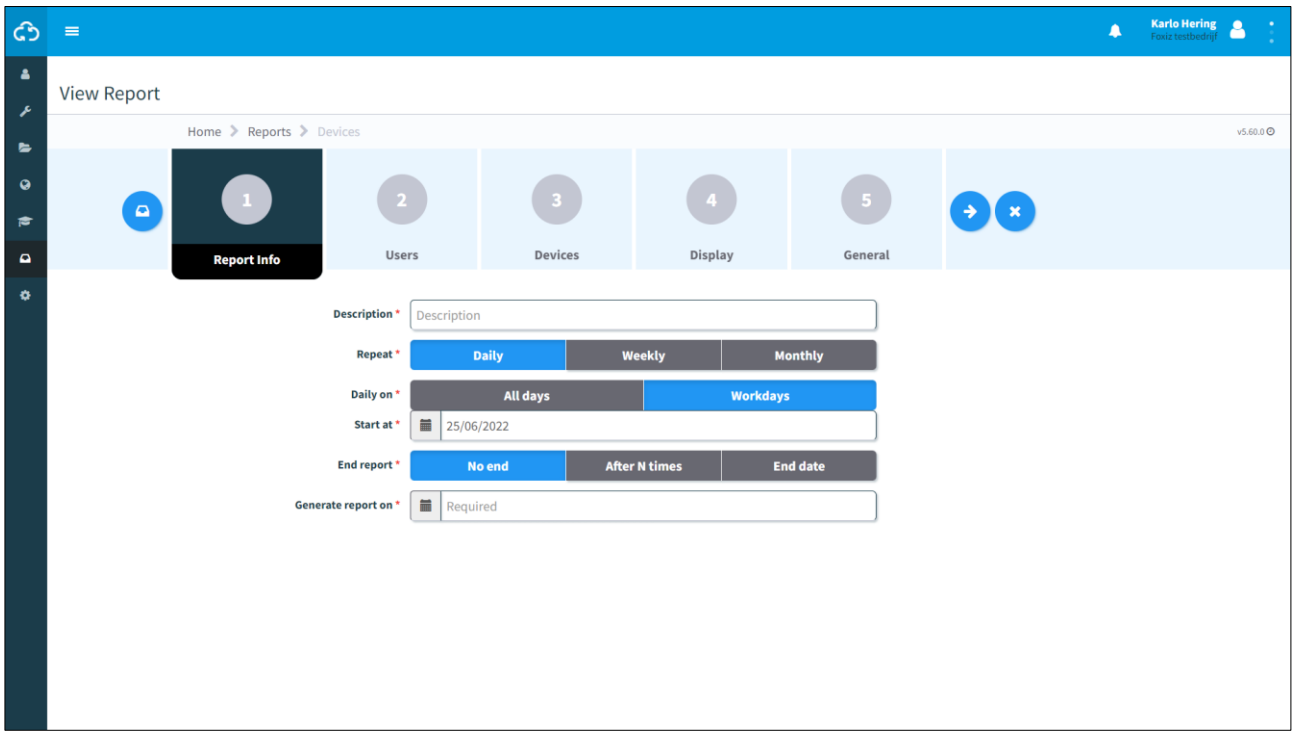

Figure 9-2: View report - report info

1. Fill in the Description of the report.
2. Choose the frequency of report generation: Daily, Weekly or Monthly.
3. Choose when the report is generated: All days or Workdays.
4. Choose when the report must be started.
5. Choose when the report must end: No end, After a number (N) times or End date.
6. Choose the daily time when the report must be generated.
7. Go to step 2.

9.1.2 Step 2 - Users

In step 2 of generating a report, select the users who will receive the report.

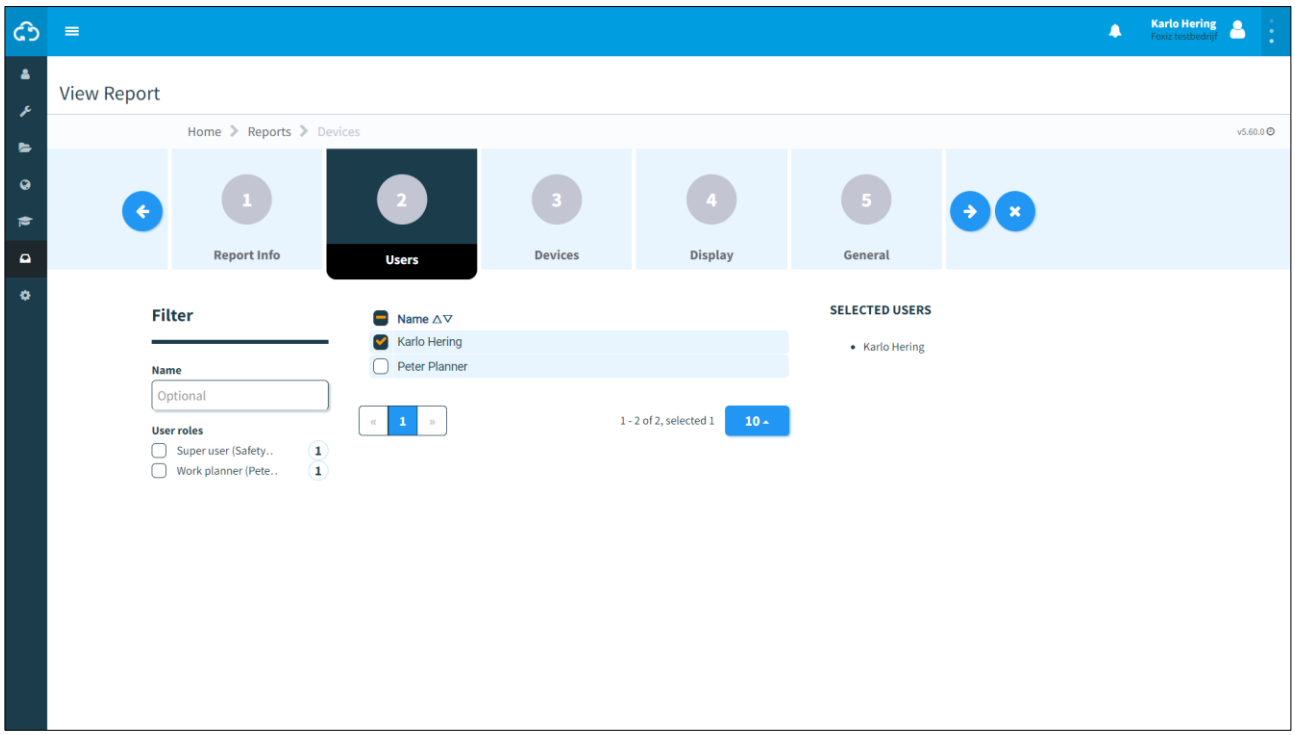

Figure 9-3: View report - users

1. Select at least one user.
2. Go to step 3.

9.1.3 Step 3 - Devices

In step 3 of generating a report, select the devices where you want to receive the report from. When the devices are selected, they will appear automatically under the tab In a list and the tab On a map.

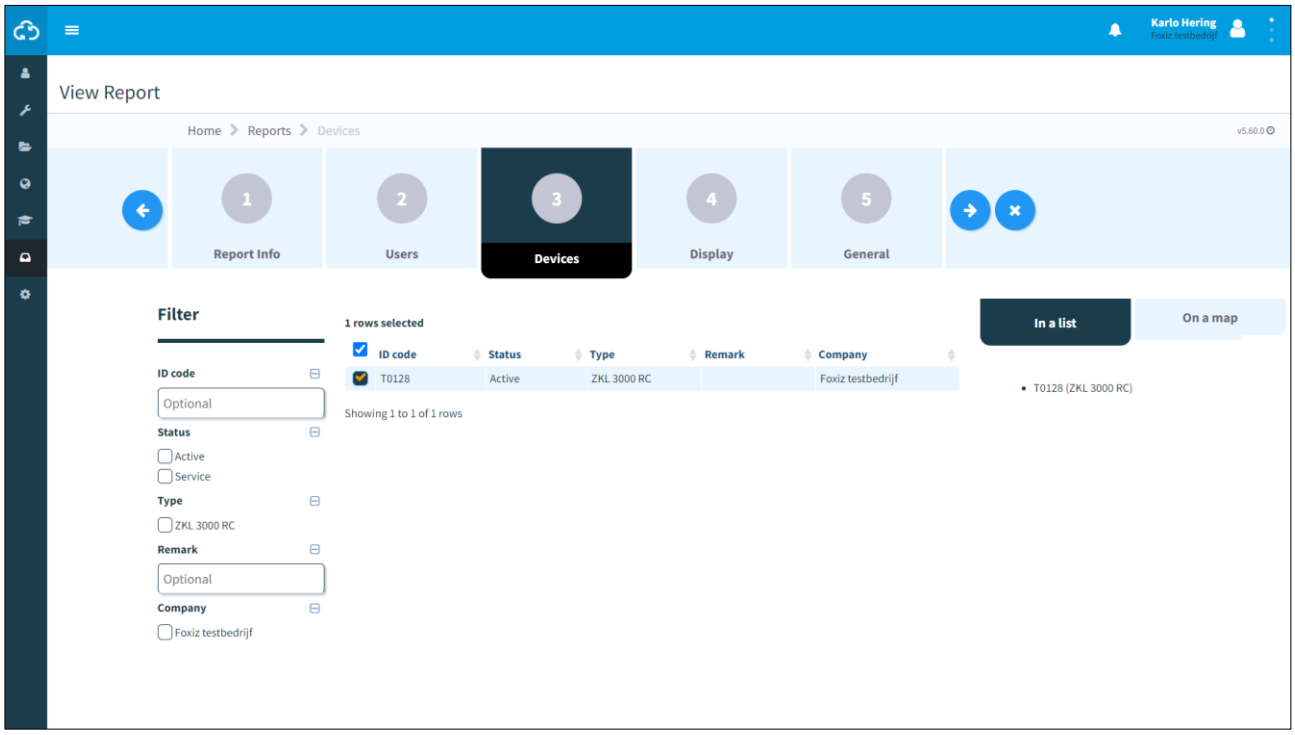

Figure 9-4: View report - devices

1. Select one or more devices.
2. Go to step 4.

9.1.4 Step 4 - Display

In step 4 of generating a report, select the report type and the data to be reported.

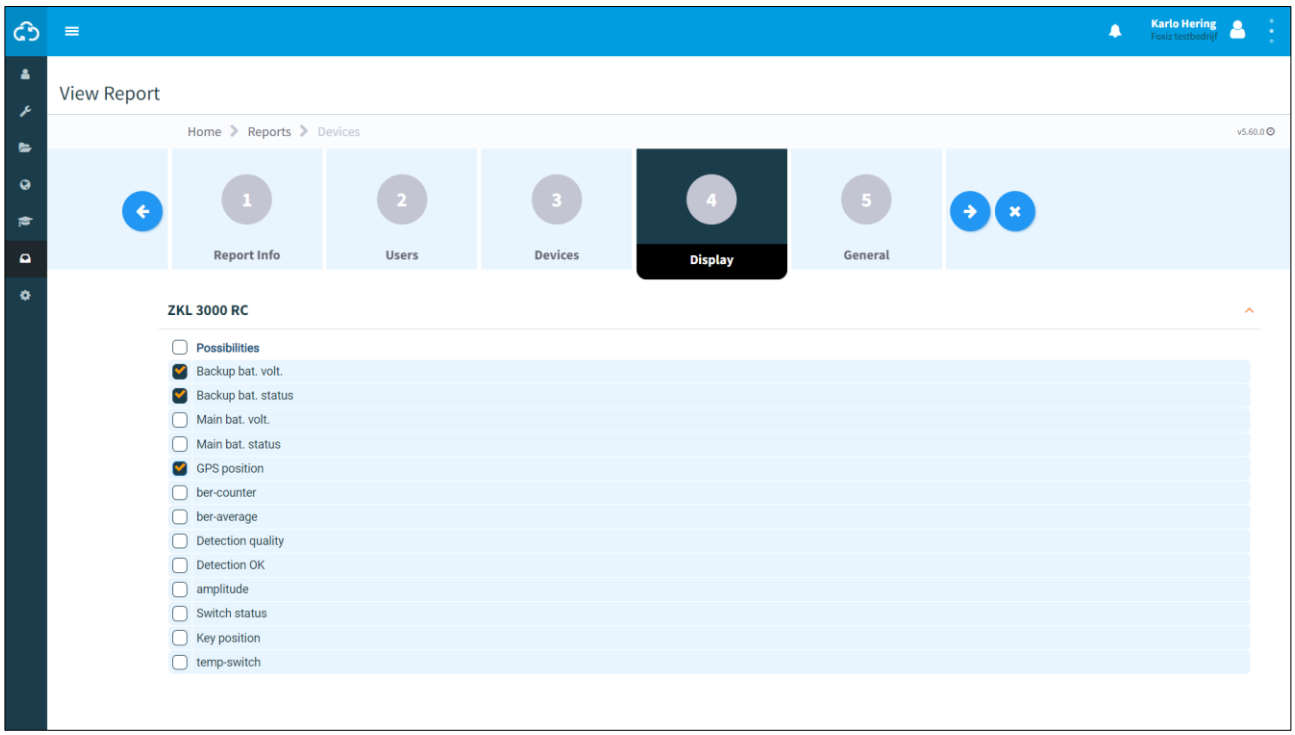

Figure 9-5: View report - display

1. Select the needed data.
2. Go to step 5.

9.1.5 Step 5 - General

In step 5 of generating a report, select some general options and save the report.

Choose to generate one overview with only the latest status of all selected devices or the history. The device's history is shown until the last time the report was generated. The first report will be based on the specified interval. When you have set up a weekly report, the first report will display the data from the last week.

NOTE
A PDF report can only store a limited amount of data. For reports with a lot of devices and/or history, choose an Excel or a CSV file.

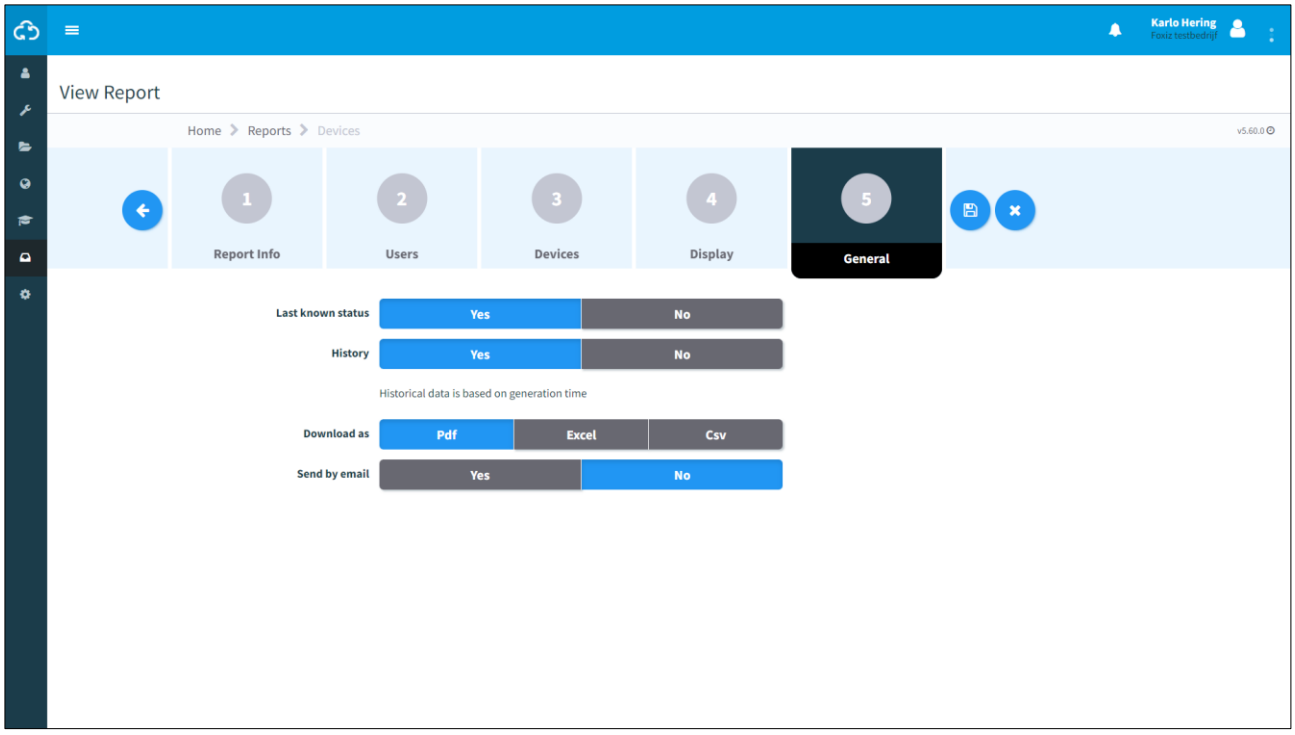

Figure 9-6: View report - general

1. Choose the last known status: Yes or No.
2. Choose the history: Yes or No.
3. Choose to download as: Pdf, Excel or Csv.
4. Choose to send by email: Yes or No.
5. Save the report.

Now, the report will be generated as specified. If the report is ready to be downloaded, MTinfo 3000 will show this through a blue pop-up in the top right corner of the user's screen.

9.2 One-time reports

This section explains how to generate a one-time report. The difference between a periodical report and a one-time report is that first two steps of a periodical report (Report info, Users) are not applicable for a one-time report.

As an example, a devices report is generated:

1. Go to the Dashboard and click Reports.

The page Reports appears:

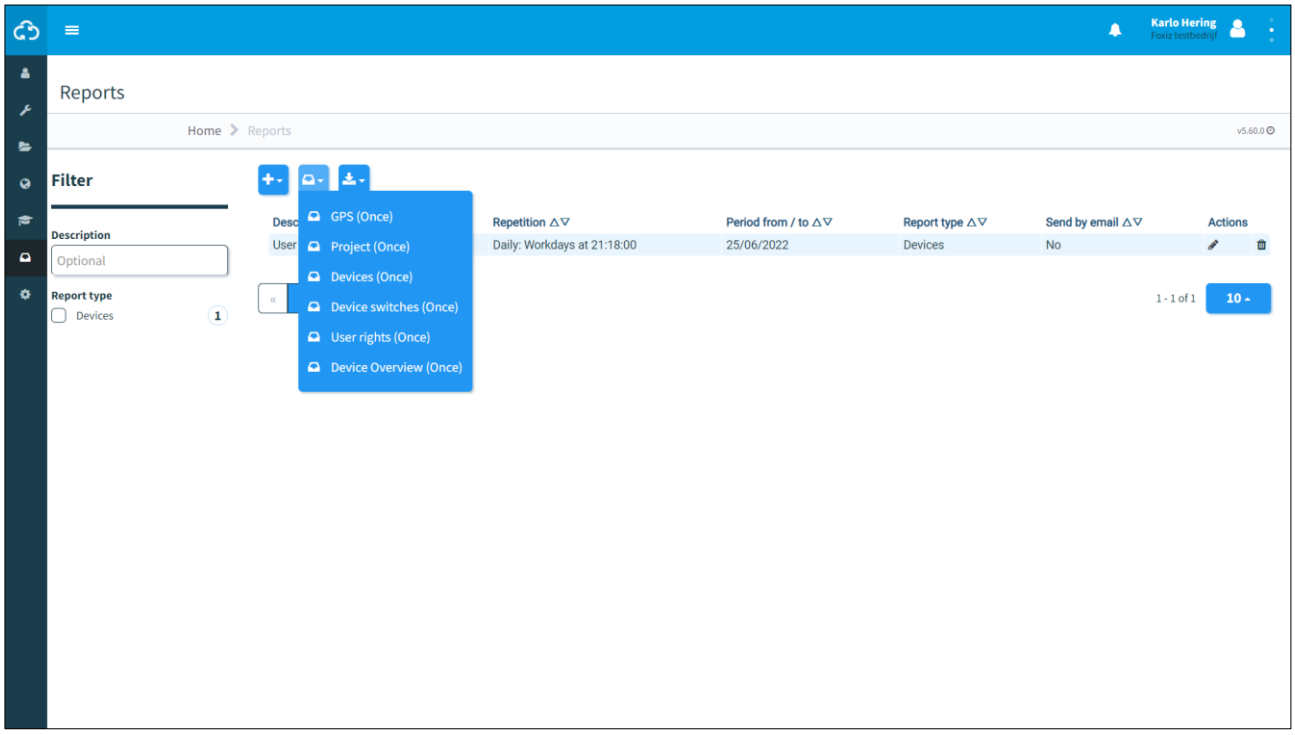

Figure 9-7: Reports - once

2. Click the icon

3. Select Devices (Once).

The page View Report appears:

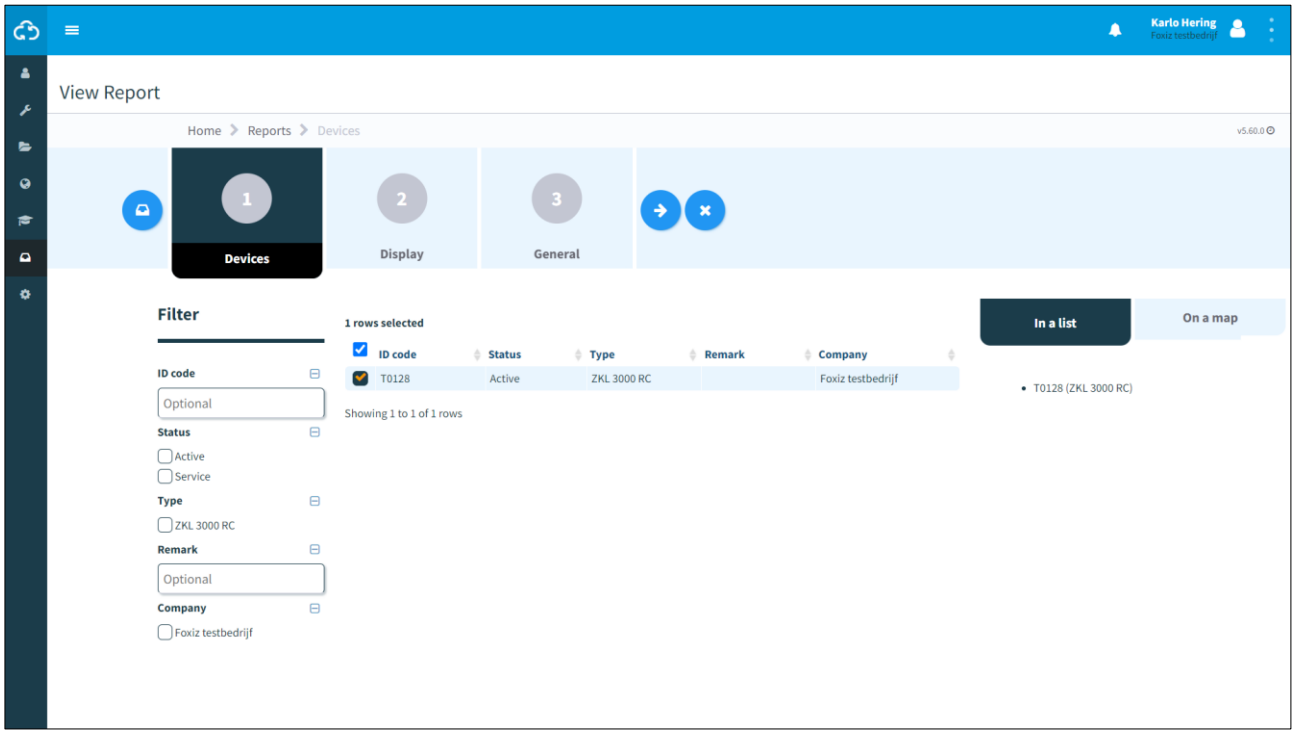

Figure 9-8: View report - one-time report

A one-time report is generated in three steps which are similar to the steps for a periodical report:

- Step 1 - Devices (Figure 9-4);
- Step 2 - Display (Figure 9-5);
- Step 3 - General (Figure 9-6).

9.3 Download reports

Download the generated reports in My MTinfo 3000, My reports (see Dashboard, Figure 5-3).

It also possible to download a pre-defined report:

1. Go to the Dashboard and click Reports.

The page Reports appears:

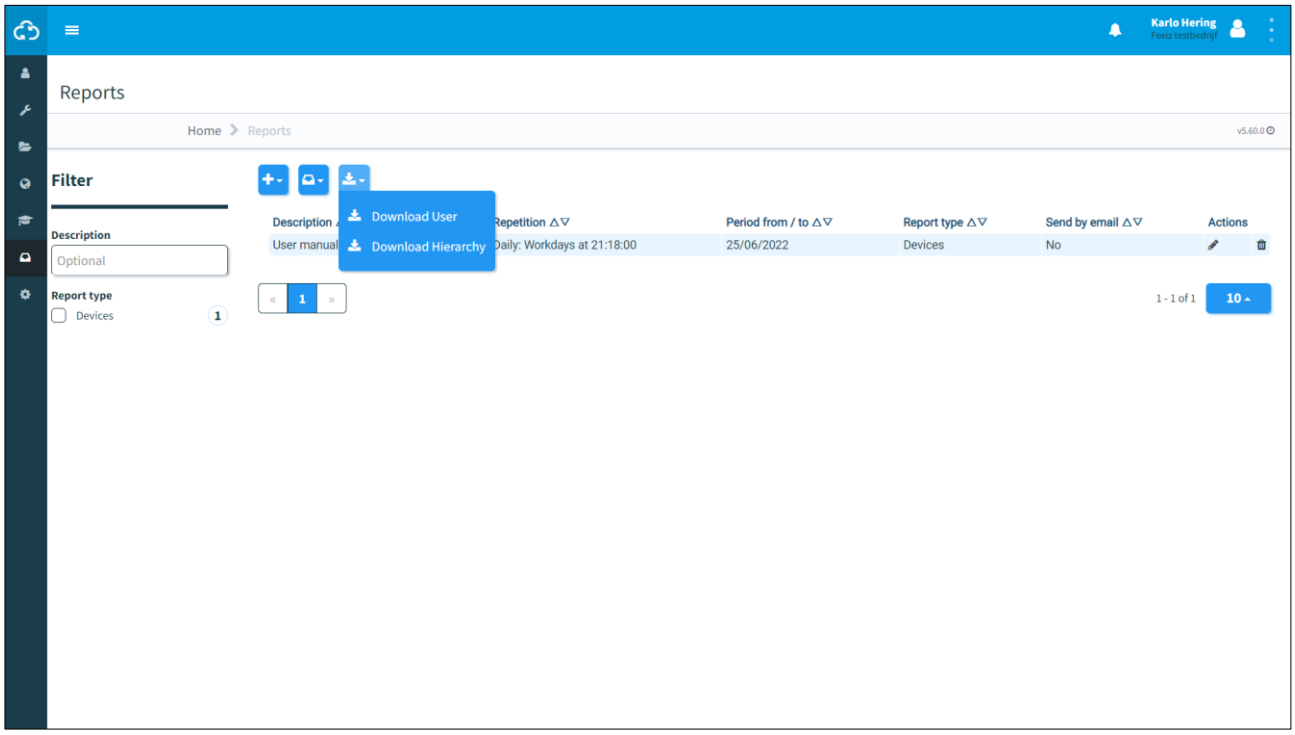

Figure 9-9: Reports - download

2. Click the icon.
3. Select Download User or Download Hierarchy.

By choosing Download User, first the company's user(s) must be selected:

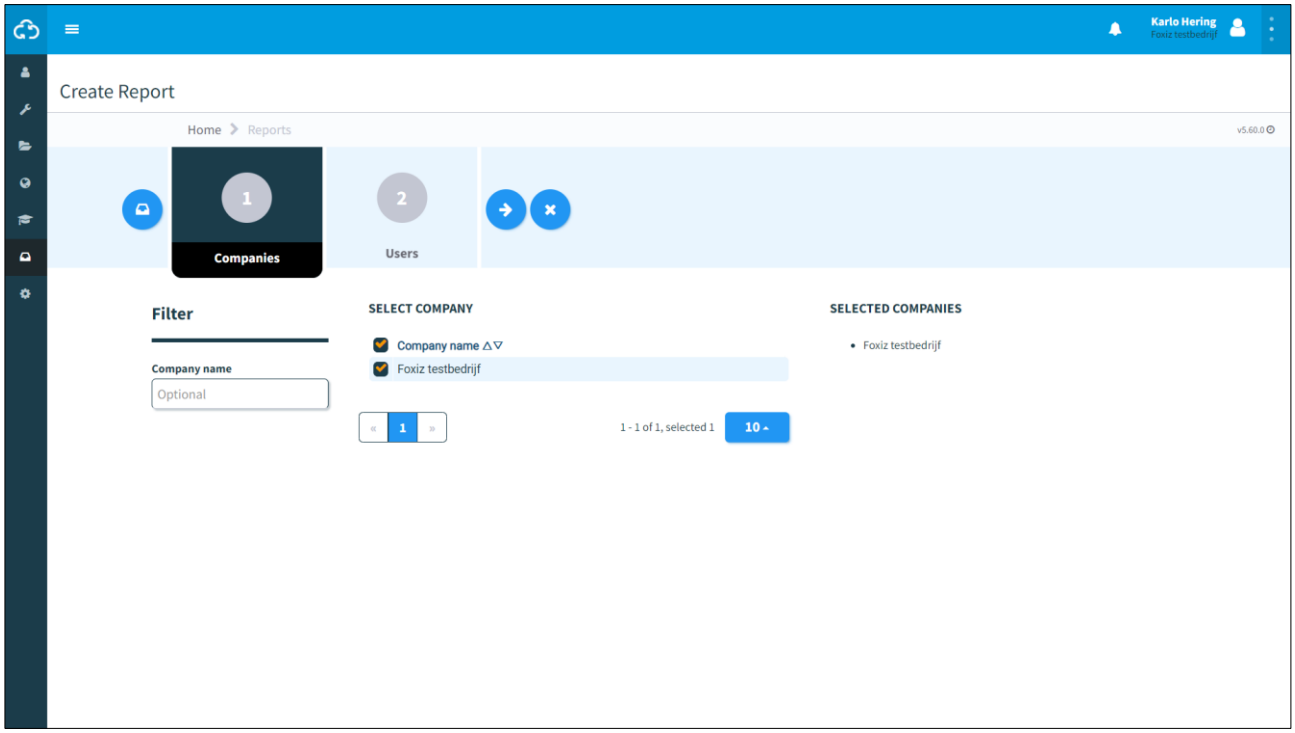

Figure 9-10: Download report - select users.

By choosing Download Hierarchy, the report is downloaded to the user's local download folder.

10 ADDITIONAL FUNCTIONS

MTinfo 3000 has several additional functions for monitoring and logging:

- real-time status of devices;
- adding data to devices;
- creating and managing templates (forms);
- project documentation;
- project log.

10.1 Real-time status

Monitor devices in real time through MTinfo 3000. It depends on the product which real-time information is presented, see the applicable appendix:

- ZKL 3000 RC (see 11);
- RDI 3000 (see 12).

There are different ways to view the real-time status:

- from the Dashboard (Figure 5-3);
- from the page View project (Figure 5-14);
- from the page Switching protection zone(s) (Figure 8-1).

In general:

1. Click the icon to show a screen with the location of the device.
2. Use the filter (left top corner) and the search function (right top corner) to search for devices.
3. Customise the map with:
   - map options (left top corner);
   - zooming in/out (bottom right corner);
   - dragging Pegman onto the map to open street view (bottom right corner).
4. Click the symbol of the device to show a screen with data of the device.

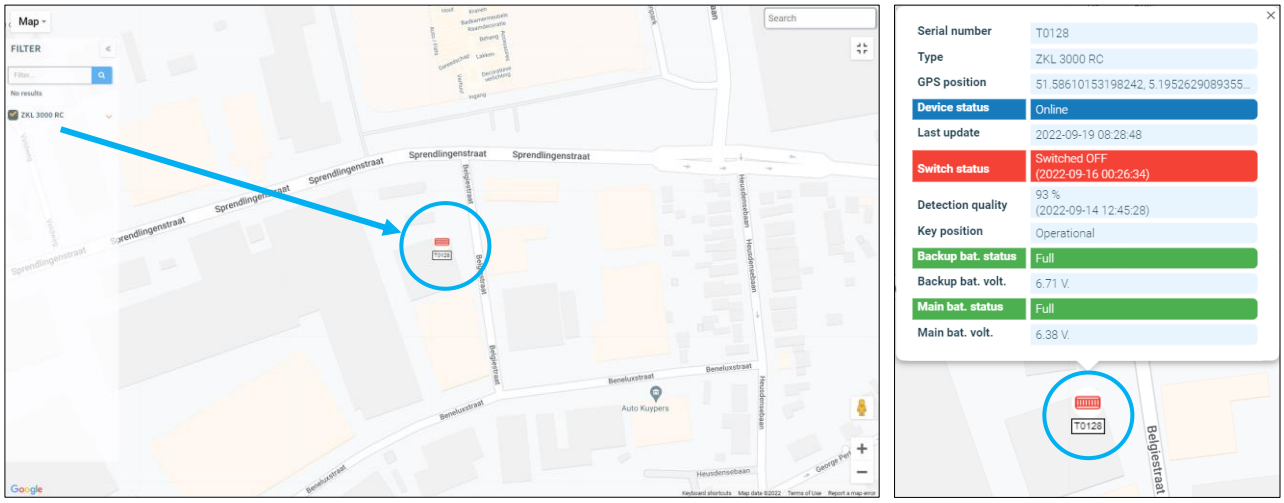

Figure 10-1: Real-time location and data

10.2 Adding data to devices

Attach labels and notes to devices to identify them easily.

1. Go the Dashboard and go to Asset management:

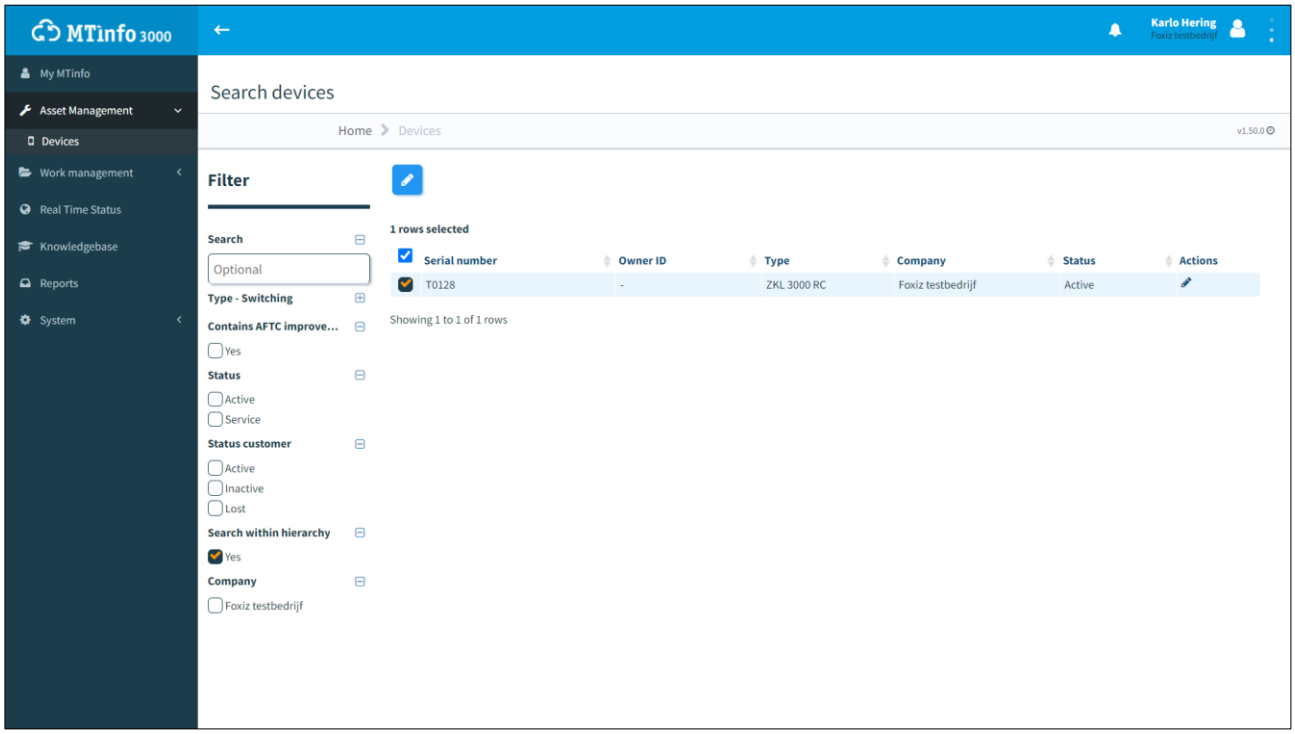

Figure 10-2: Dashboard - asset management

2. Select Devices in the left menu.
3. Select the devices you want to attach a label or comment to.
4. Click the icon.

The page Edit device appears:

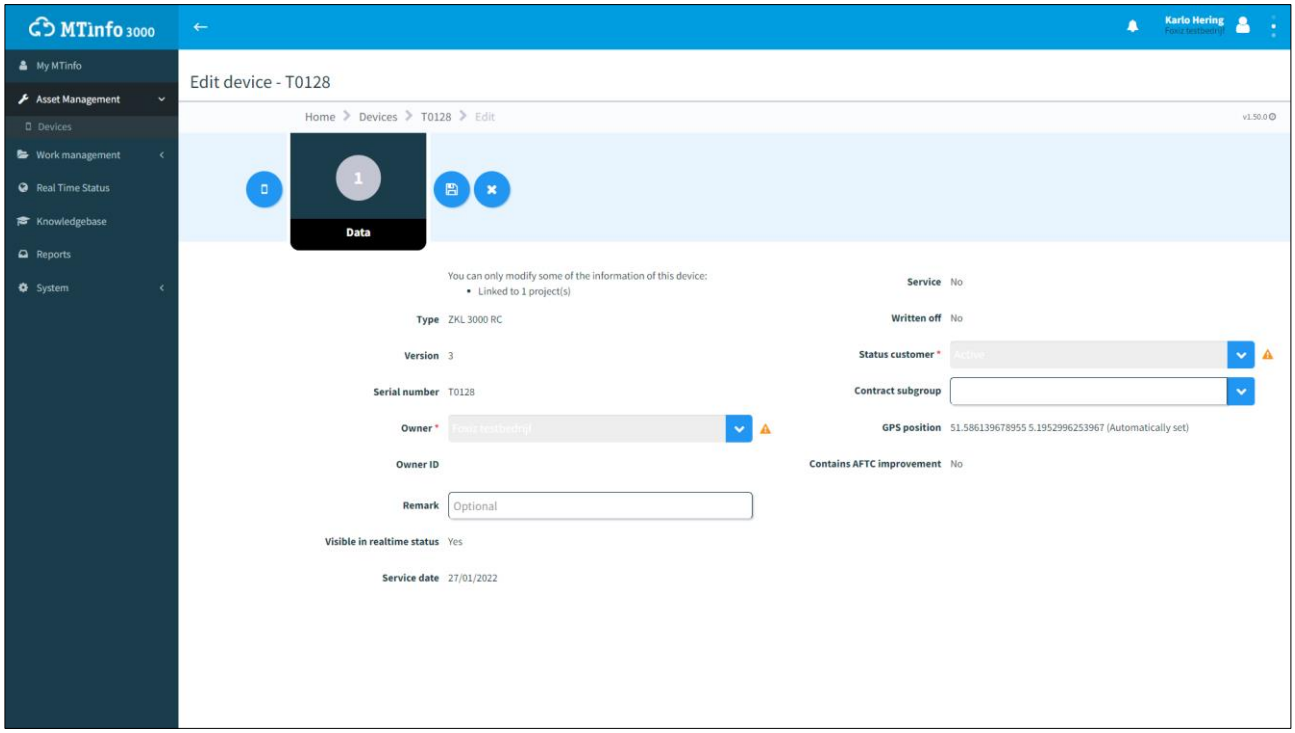

Figure 10-3: Edit device

5. Edit the device's data. Note:
   - This is also shown in the real-time status and can be used to give further information about a device to the switchers who consult the real-time status;
   - grey fields cannot be changed because the device is linked to other (released) projects.

6. Save.

10.3 Templates

MTinfo 3000 offers the possibility to manage and create company specific templates (forms).

1. Go to the Dashboard (left side, see Figure 5-3) and go to Work Management – Templates.

The page Search template appears:

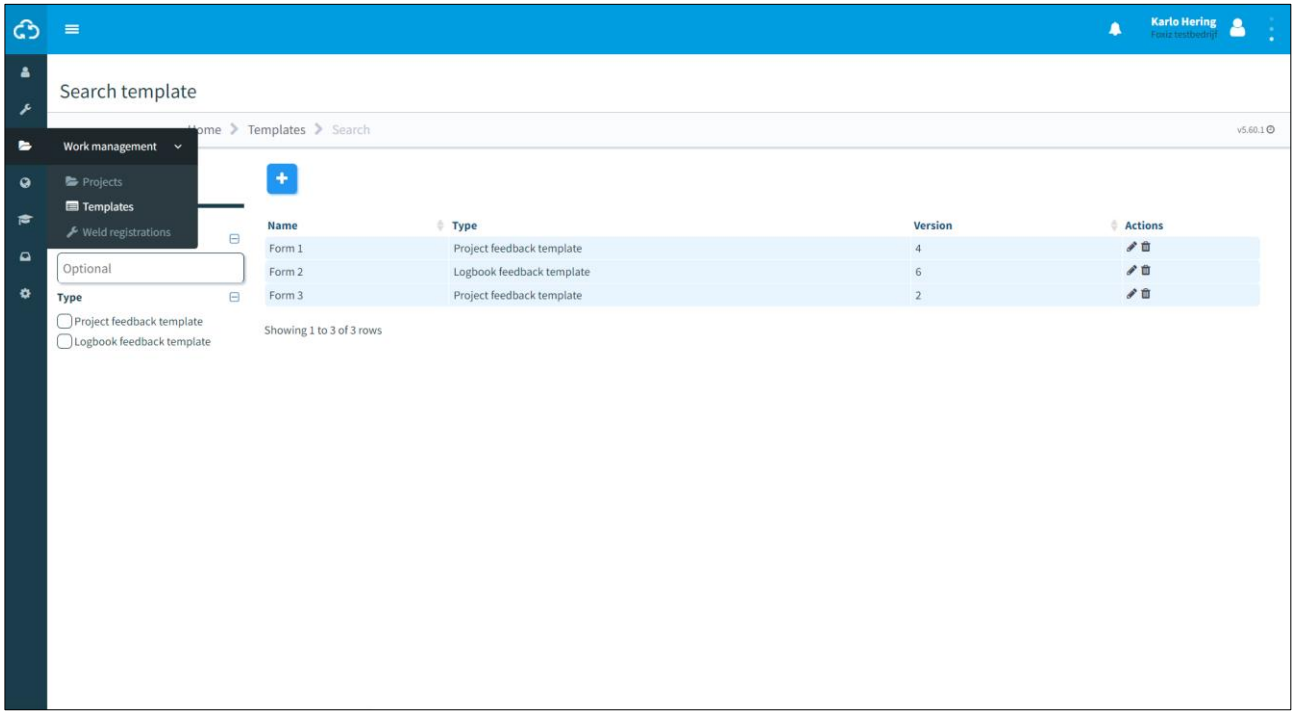

Figure 10-4: Search templates

2. Click the icon to create a new template.

Follow steps 1 and 2 to create a new template.

10.3.1 Step 1 - General

In step 1 of creating templates, add the required template information.

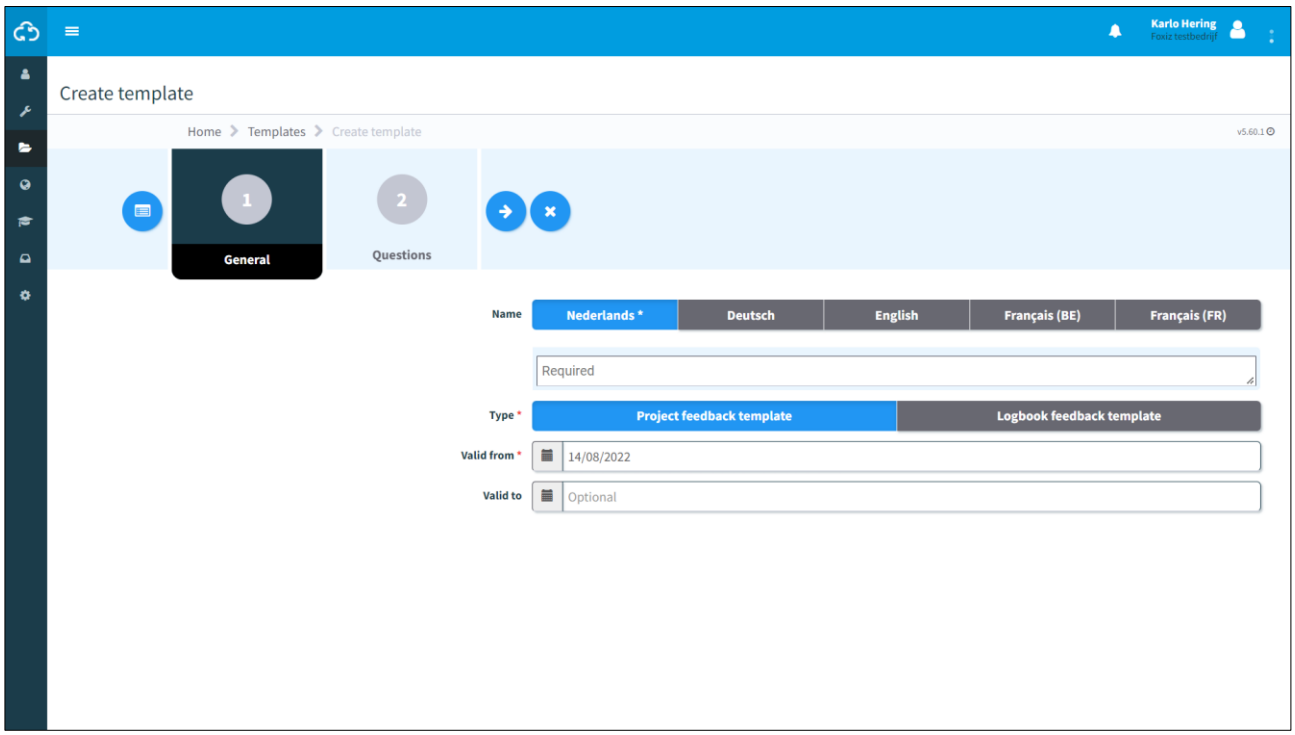

Figure 10-5: Creating templates - general

3. Select the language (name).
4. Select the type: Project feedback template or Logbook feedback template.
5. Fill in the valid from date and valid to date.
6. Go to step 2.

The Logbook feedback template is used in the MTinfo 3000 app and can be filled out multiple times by one user. This is not possible for the Project feedback.

How to make a Project feedback template is explained in this section.

10.3.2 Step 2 - Questions

In step 2 of creating templates, drag and drop predefined questions to create a new template.

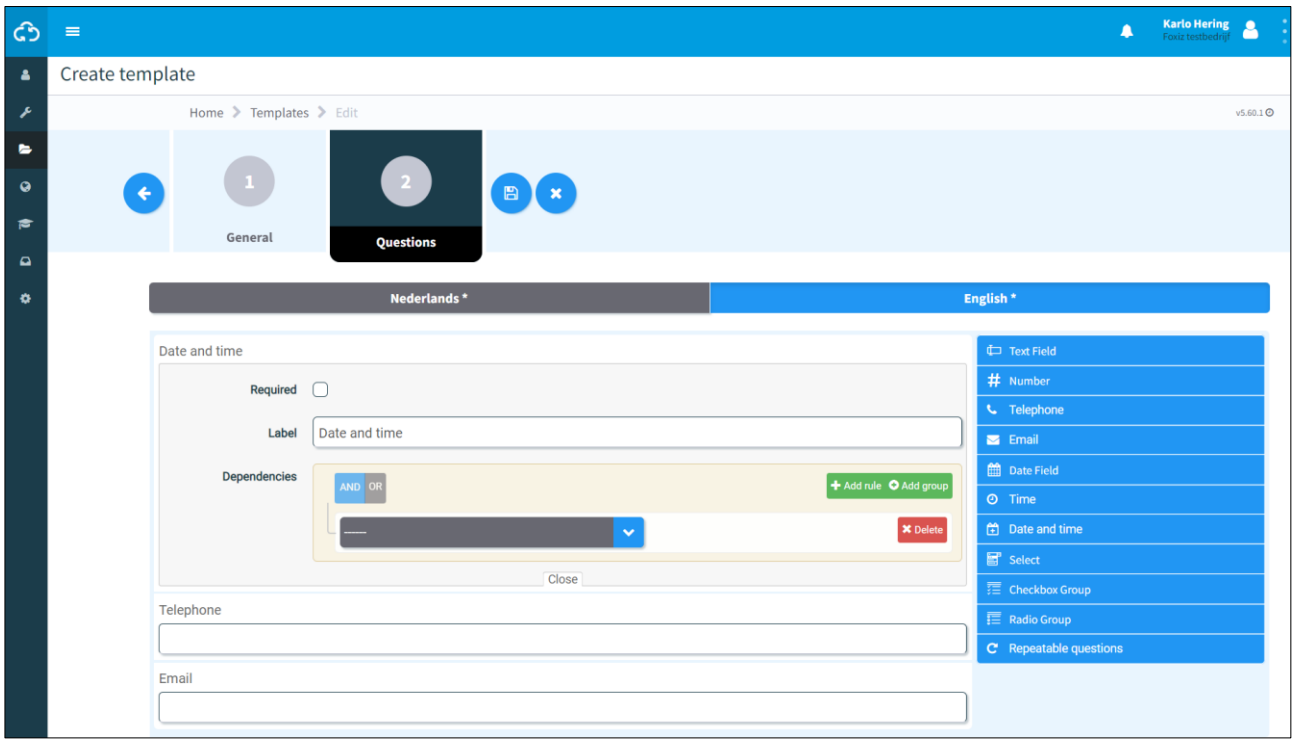

Figure 10-6: Creating templates - questions

1. Drag and drop the predefined questions. Change the order of questions by moving them up or down.

2. Click this icon to edit a predefined question:
   - required, the user of the template must answer the question: yes/no;
   - label, change the name of the question;
   - dependencies, the question only appears on the template when meeting the conditions:
     - and/or;
     - by adding a new rule;
     - by adding a new group.
   - if needed, delete a dependency.

3. Save the template.

Table 10-1 explains the types of predefined question:

QUESTION	EXPLANATION
Text Field	An open-ended question that allows users to formulate their own answer. It is possible to select default values that will be filled in automatically when these values are entered in MTinfo 3000 projects.
Number	A question that requires entering a number. It is possible to indicate what the minimum and default value of this number must be, and which increment is needed (for example 'per 10').
Telephone	A field that requires entering a telephone number. The option to add the country code appears in the form automatically.
Email	A field for entering an email address.
Date Field	A field for entering a date.
Time	A field for entering a time.
Date and time	A field for entering simultaneously a date and time.
Select	A drop-down menu for choosing one answer.
Checkbox Group	A list of options for ticking one or more answers. The creator of the template can set a minimum and maximum number of options to tick.
Radio Group	A list of options from which just one answer can be selected.
Repeatable questions	A bundle of questions which can be created and completed multiple times.

Table 10-1: Question types

After saving the template, it can be used in MTinfo 3000 projects. It is always possible the edit or delete templates (see Figure 5-14, tab Documents).

NOTE
Editing or deleting templates does not affect released projects. Only after a project is returned and released again, template modifications are realized.

10.4 Project documentation

In step 4 of the project planning, documents have been added optionally. Use the documents menu to view added or filled out documents that are used during a project.

Whenever a user adds or fills out forms via the app, it will be shown on the page View project (Figure 5-14), tab Documents.

10.4.1 General

You can choose to download:

- Project data;
- Project data + feedback/logbook;
- Archive (ZIP);
- Document acceptance.

NOTE
Downloading the Archive (ZIP) may take a while.

1. Go to the page View project (Figure 5-14) and click the tab Setup.

The screen View project appears:

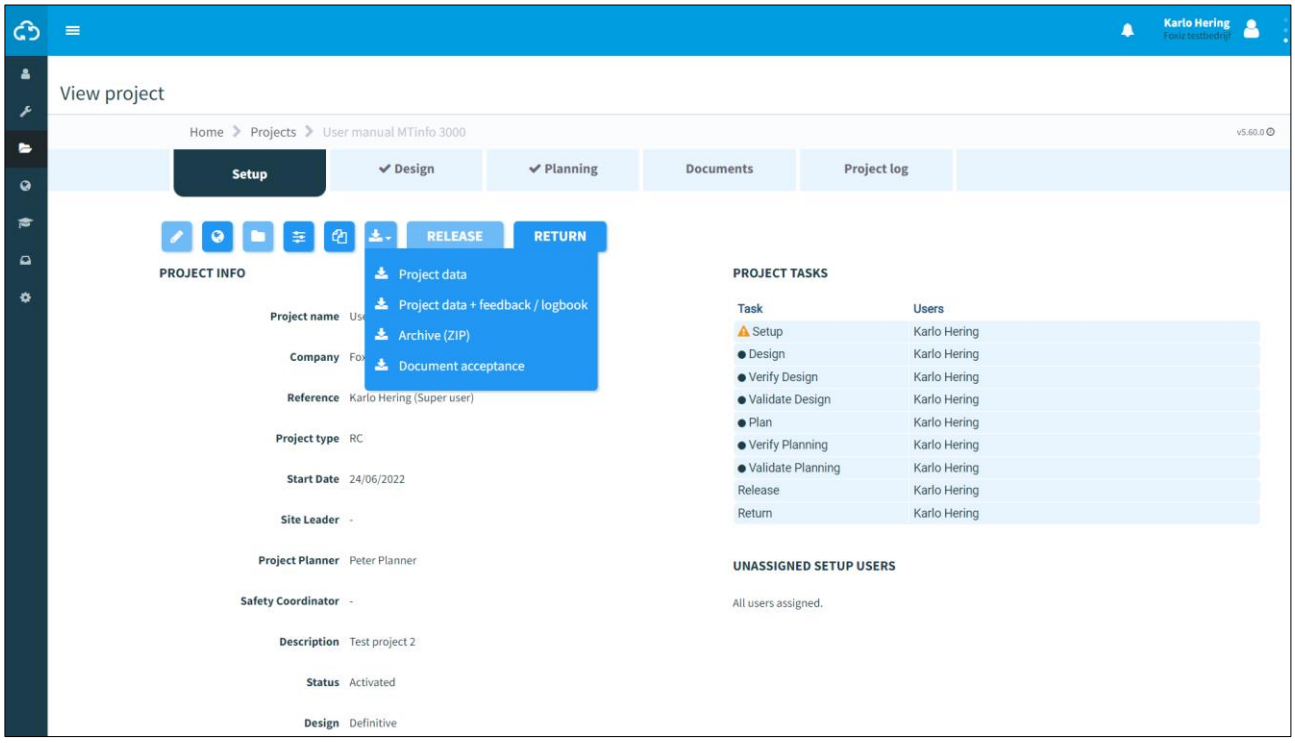

Figure 10-7: Project documentation - general

2. Click the icon.
3. Choose an option.

The project documentation will be downloaded to the user's local download folder.

10.4.2 Documents through the app

When a user uploads or fills in a document through the app, it will be shown here.

1. Go to the page View project (Figure 5-14) and click the tab Documents.

The page View project appears:

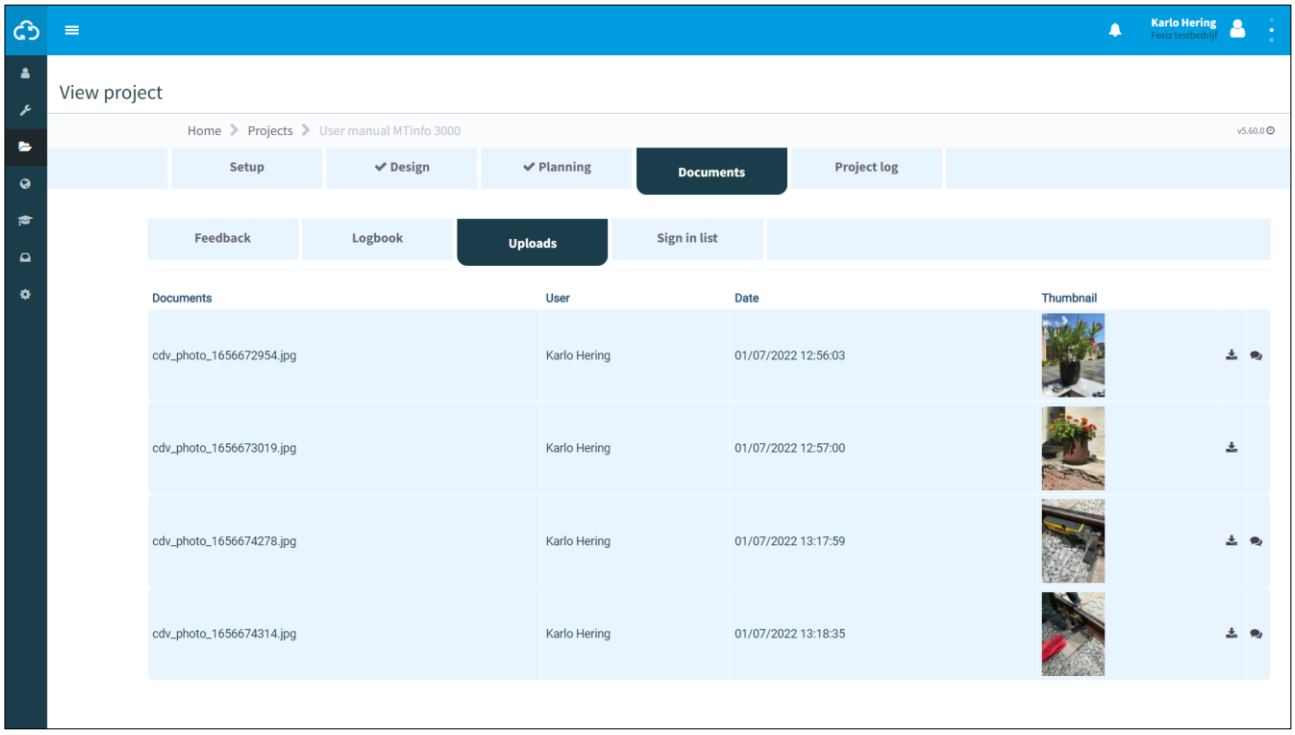

Figure 10-8: Project documentation - through the app

2. Select a tab: Feedback, Logbook, Uploads, Sign in list.
3. Select documents.
4. Click the icon to download documents.
5. Click the icon to add comments to a document.

The project documents will be downloaded to the user's local download folder.

10.5 Project log

The project log shows the history of the performed tasks within a project.

1. Go to the page View project (Figure 5-14), tab Project log:

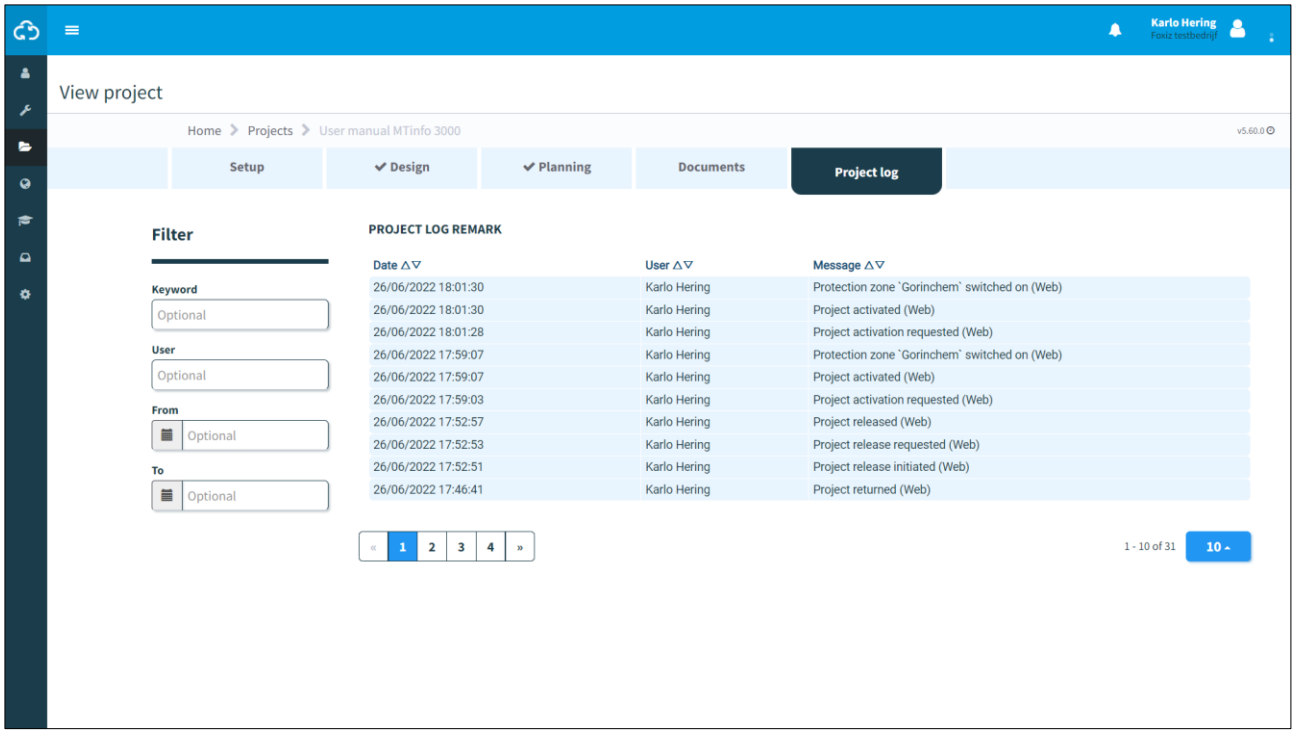

Figure 10-9: Project log

2. Search the Project log remark by using a keyword, user or period (from/to).

11 APPENDIX ZKL 3000 RC

11.1 Explanation real-time status ZKL 3000 RC

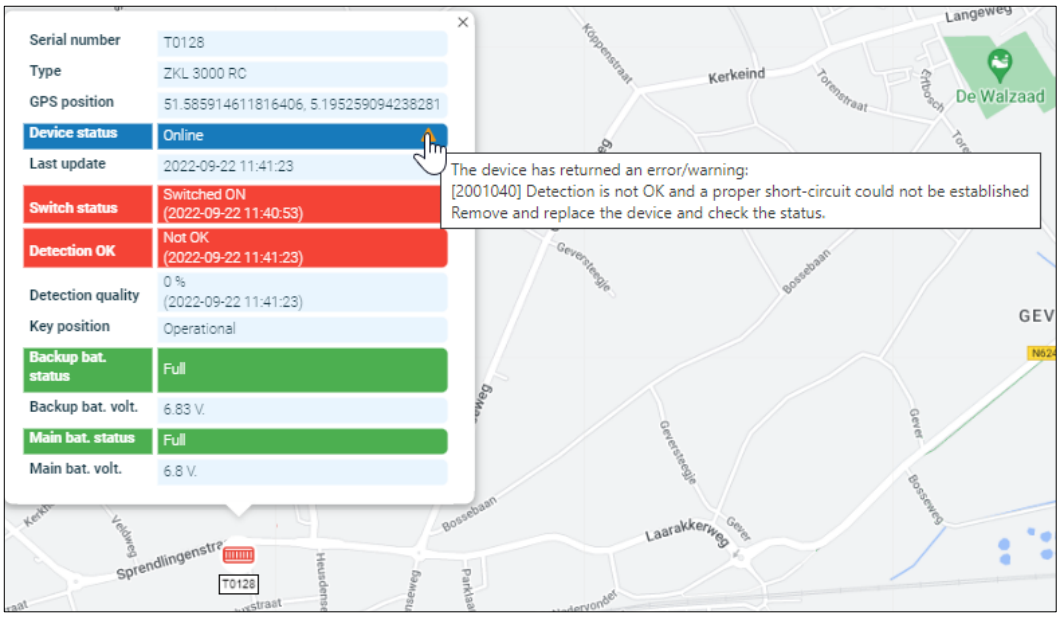

Figure 11-1: Real-time status ZKL 3000 RC

ITEM	EXPLANATION
Serial number	Serial number of the selected device.
Type	The type of the device that is being displayed, in this case a ZKL 3000 RC.
GPS position	GPS position of the selected device.
Device status	Status of the device. When it is offline, it is not connected with MTinfo 3000 or both batteries are empty.
Last update	Last received message from the device.
Switch status	Device is switched ON or OFF.
Detection OK	The detection is OK or not OK.
Detection quality	Detection quality (%) between the ZKL 3000 RC and the track. Anything > 0% is considered as OK. The detection quality only becomes not OK when the value is exactly 0%.
Key position	• OPERATIONAL: device can be switched remotely. • ON: manual switched is shorted, cannot be switched remotely. • OFF: manual switched is not-shorted.
Battery status (backup, main)	• Full: sufficient power (66-100%). • Half: adequate power (33-66%). • Low: low in power (15-33%). • Critical: almost empty (3-15%). • Depleted: completely empty (0-3%). • Removed: completely empty (0%).
Battery voltage (backup, main)	Shows the voltage of the batteries of the ZKL 3000 RC.

Table 11-1: Real-time status explanation ZKL 3000 RC

NOTE
For a more in-depth explanation, see the User manual ZKL 3000 RC, section Troubleshooting. When an error appears in the real-time status, it is very important to consult the manual.

12 APPENDIX RDI 3000

12.1 Explanation real-time status RDI 3000

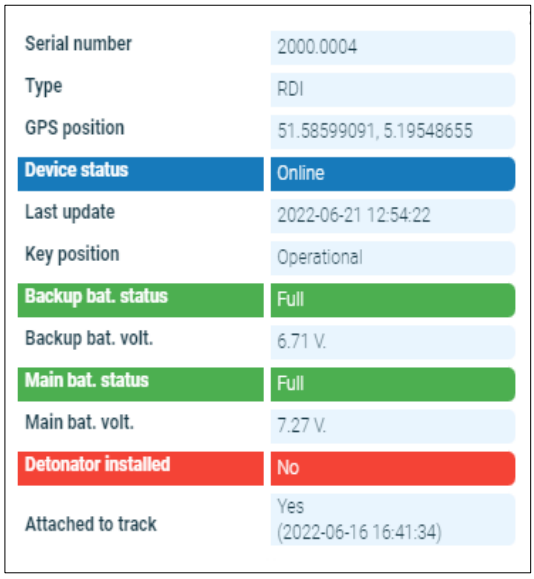

Figure 12-1: Real-time status RDI 3000

ITEM	EXPLANATION
Serial number	Serial number of the selected device.
Type	Type of the device that is being displayed, in this case a RDI 3000.
GPS position	GPS position of the selected device.
Device status	Status of the device. When it is offline, it will not connect with MTinfo 3000 or both batteries are empty.
Last update	Last received message from the device.
Key position	• OPERATIONAL: device can be switched remotely. • ON: manual switched is shorted, cannot be switched remotely. • OFF: manual switched is not-shorted.
Battery status (backup, main)	• Full: sufficient power (66-100%). • Half: adequate power (33-66%). • Low: low in power (15-33%). • Critical: almost empty (3-15%). • Depleted: completely empty (0-3%). • Removed: completely empty (0%).
Battery voltage (back-up, main)	Shows the voltage of the batteries of the RDI 3000.
Detonator installed	• Yes: detonator is on the rail. • No: detonator is not on the track, lies next to the rail.
Attached to track	• Yes: the RDI 3000 is attached to the rail. • No: the RDI 3000 is not attached to the rail.

Table 12-1: Real-time status explanation RDI 3000

NOTE
For a more in-depth explanation, see the User manual RDI 3000, section Troubleshooting. When an error appears in the real-time status, it is very important to consult the manual.