ActiveMap Mobile Android user manual 16.9

Activemap Computer Systems Design

23-03-2023

CONTENTS

CHAPTER

ONE

GENERAL INFORMATION

1.1 Application Information

ActiveMap Mobile is a part of the ActiveMap applied software suite for automated control of field employees, as well as performing works at service objects (hereinafter referred to as the System).

ActiveMap is an online system for organizing the interaction between field workers and the dispatcher (task coordinator). The system provide the ability to plan and manage the production work, as well as operational quality control of the field service.

Capabilities of ActiveMap:

- Flexible customization to meet the needs of the company.

ActiveMap can be adapted to any business process. A list of work types, stages and deadlines can be set up for each organization.

- Adding tasks and controlling their execution.

The system allows to add operational and planned tasks, including scheduled tasks on a given template.

- Object inventory.

ActiveMap helps carry out an inventory of objects: updating information on the status of existing objects, identifying nonexistent and creating new objects.

- Control of field employees.

The system helps to control employees with real-time tracking of the location, viewing the history of their movement and recording the execution of requests.

- Convenient and quick interaction between field employees and work coordinators.

ActiveMap speeds up the process of exchanging results between the field employee and the work coordinator. The coordinator can promptly update task information, which is immediately displayed to the field employee. The coordinator also can quickly return the job to the fieldworker for execution based on the results of the fieldwork.

- Using photo and video fixation materials and GLONASS/GPS data.

The system makes it possible to fix the fact of work fulfillment by means of photos, video recordings, location data. This gives the opportunity to avoid field inspection of executed orders.

- User rights configuration.

The system gives the possibility to configure user rights. Each user is assigned a certain role. The role of the system user affects access to the list of tasks, editing and management of these tasks. The roles are from simple users to the administrator of the entire system.

- Displaying service objects on a map.

ActiveMap allows to create tasks on the basis of service objects with automatic filling of coordinates and task fields.

- Creating electronic documents.

The system allows to create reports on the work with tasks and user activity based on the document form of the organization, as well as invoices issued by field employees.

More information about the comprehensive capabilities of the ActiveMap system can be found on the website of the Activemap Computer Systems Design company https://activemap.me/.

ActiveMap Mobile is a mobile application for the Android operating system, which implements the client part of the task management module of the ActiveMap software suite. ActiveMap Mobile allows setting tasks and monitoring the status of their execution. The application helps to coordinate the work of office and field staff, which increases the efficiency of mobile workers.

ActiveMap Mobile capabilities (Fig. 1.1):

- **Real-time data collection.** Workers send photos and videos from event locations to the dispatcher. The files are geo-referenced and show where the footage was taken.
- **Tasks.** Mobile workers receive tasks through the app. The dispatcher sends tasks and monitors how they are performed. Quick assignment of tasks increases the productivity of mobile teams.
- **Interactive maps.** ActiveMap Mobile provides access to corporate maps. The application works with data layers. Layers are georeferenced data sets. Companies mark real estate objects, clients, communications and more on them. Everything that is outside the office and is of interest to the company is added with tags to the map.
- **Data Analysis**. ActiveMap Mobile allows to generate statistics and reports on the effectiveness of employees' work.

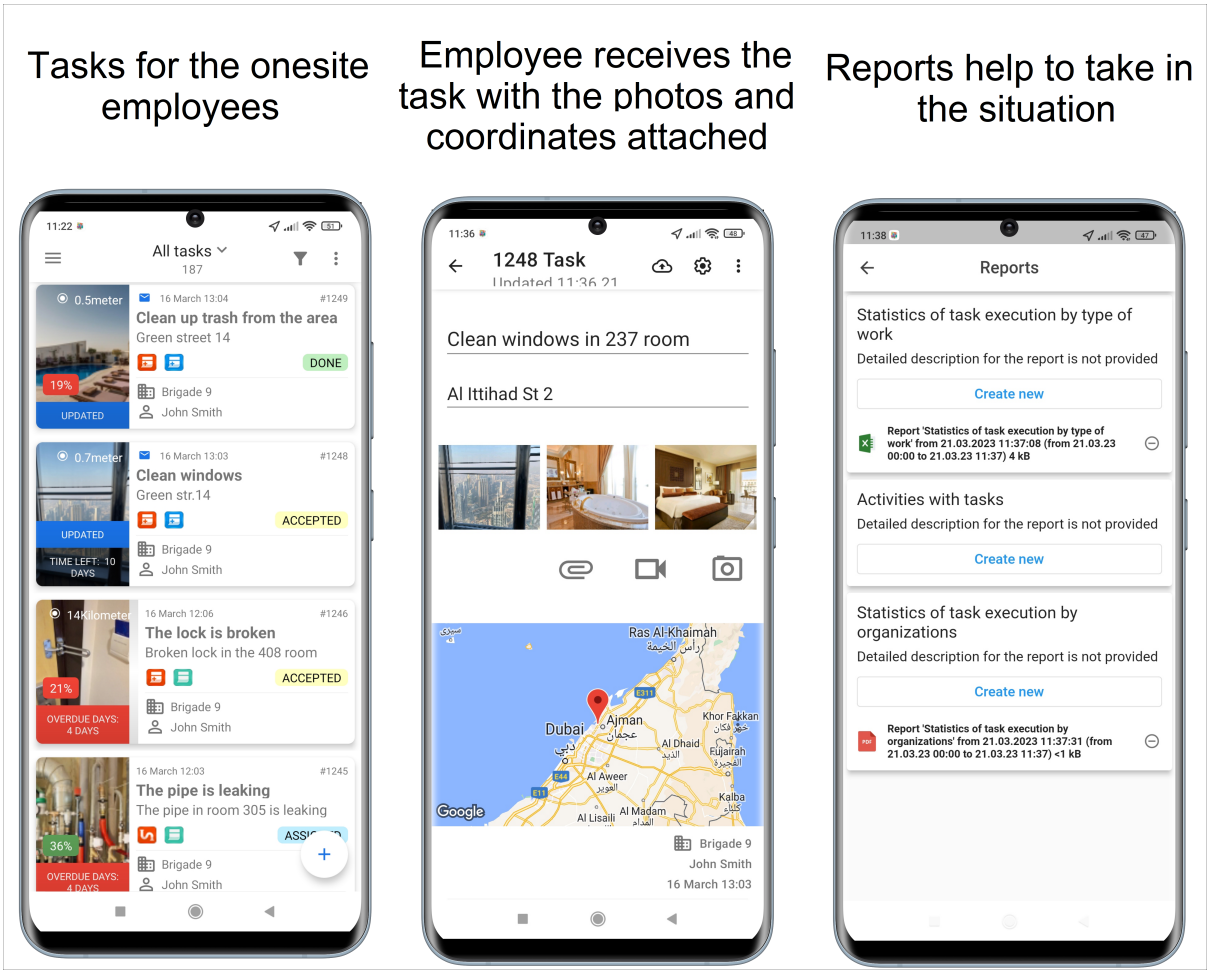


Fig. 1.1: ActiveMap Mobile capabilities

The ActiveMap Mobile application is designed to accomplish the following tasks:

- prompt receipt and execution of tasks with the necessary information specified (location, photo angles, deadline, work description, checklist, etc.);
- full functionality in offline mode[1];
- real-time task creation and assignment to employees;
- generation of reports to control the efficiency of employees' work;
- control of employee location and ability to track removal from the area of responsibility in real time;
- distribution of planned tasks among employees using schedules with the ability to make real-time changes;
- report generation.

[1] The application allows users to add and save tasks on the their mobile device without access to the Internet. Sending user tasks to the server and viewing the tasks registered on the server is possible only when the Internet is available.

1.2 Software and hardware requirements

The application is designed to work on mobile devices with Google Android 5.0.0 and higher. The following is required to work:

- mobile application ActiveMap Mobile,
- Internet connection[1],
- availability of a built-in camera,
- permission to access:
  - camera and media files of the device,
  - device location,
  - personal information (email address, user IDs, phone number),
  - files and documents,
  - application and performance information,
  - User device IDs.

The permissions for the ActiveMap Mobile application can be expanded after each update. More information about permissions can be found in the app description in the Google Play store.

1.3 Installing the app

> **Attention:** If you have a link to ActiveMap Mobile from the administrator of your organization, you can directly access the application in Google Play store. After installation, the application opens and automatically logs in to the user account.

To install ActiveMap Mobile on the mobile device, you have to go to Google Play store and use the app search form to find the ActiveMap Mobile app (Fig. 1.2).

[1] The application allows users to add and save tasks on the their mobile device without access to the Internet. Sending user tasks to the server and viewing the tasks registered on the server is possible only when the Internet is available.

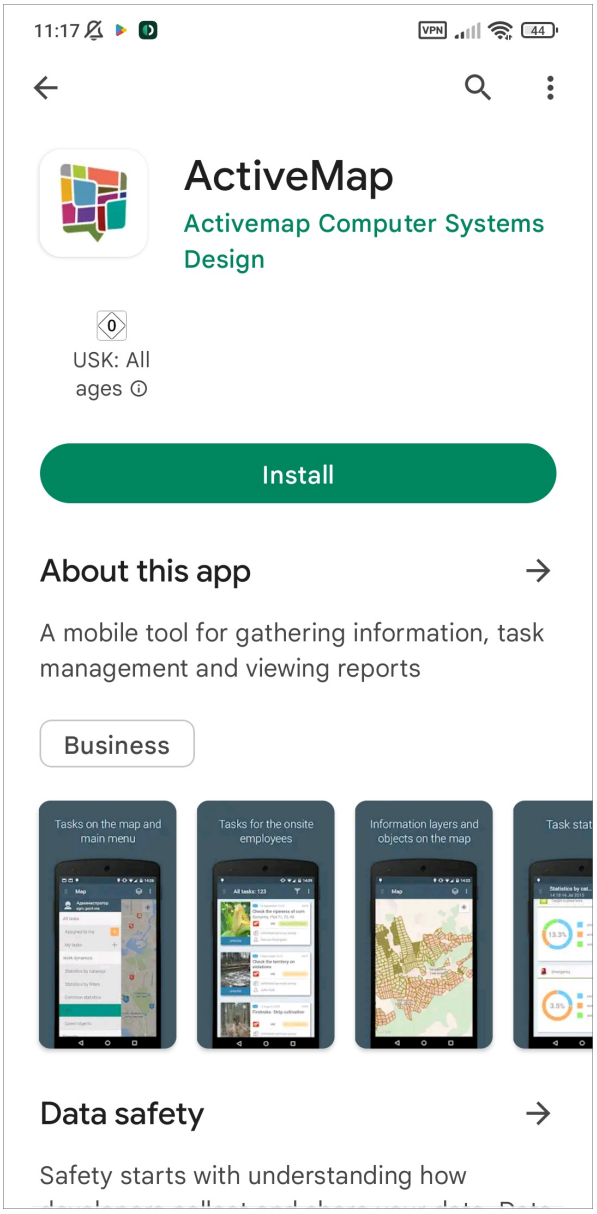


Fig. 1.2: ActiveMap Mobile app on Google Play Store

After pressing “Install” and accepting the necessary permissions to run the application, the ActiveMap Mobile download process will start on the device. Once the download process is complete, a ActiveMap Mobile launch icon will appear in the application list (Fig. 1.3).

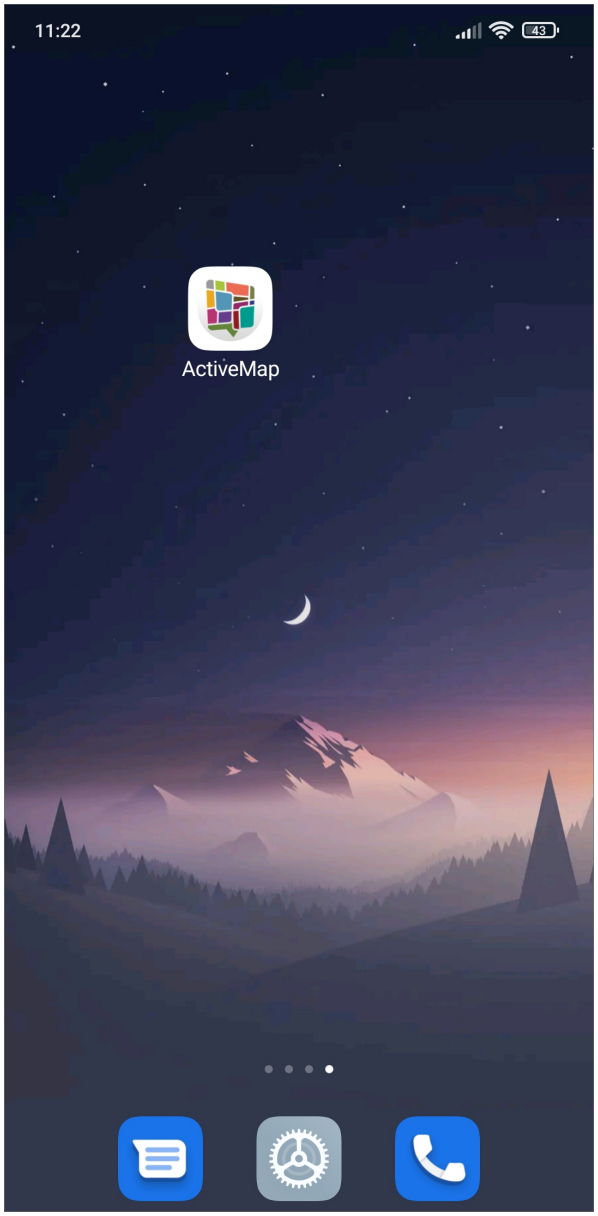


Fig. 1.3: ActiveMap Mobile launch icon in application list

When an update is released, a message about the new version will be displayed at the moment the application is launched. Press “Update” to install the new version (Fig. 1.4). The application page in Google Play will open. You need to complete the standard steps to update applications on the device.

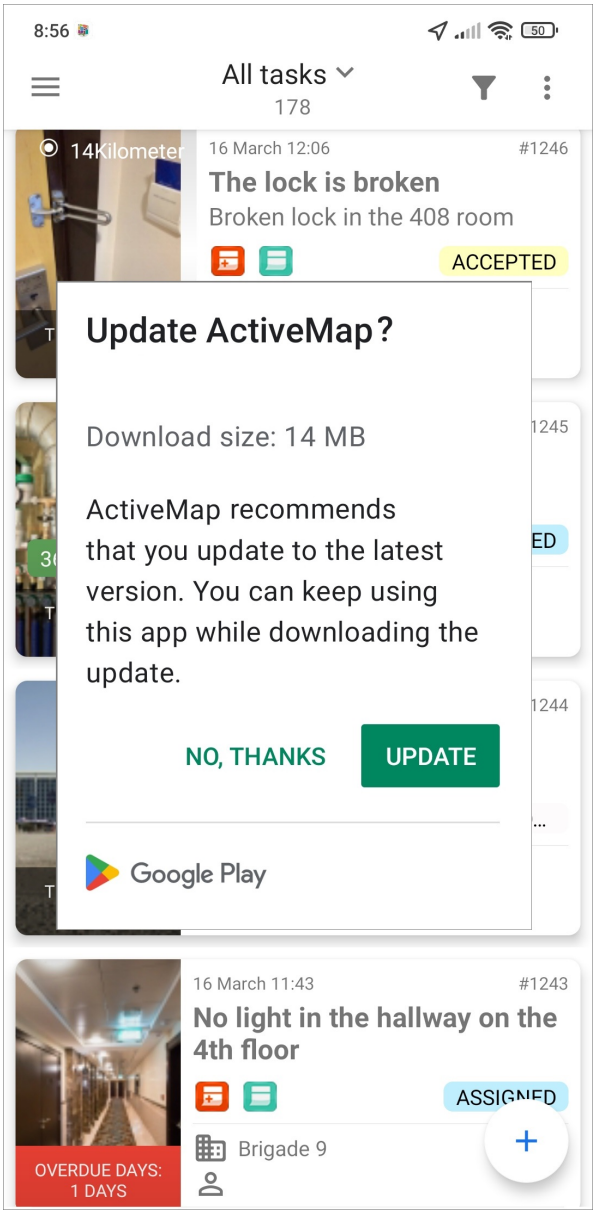


Fig. 1.4: Updating the application

CHAPTER

TWO

WORKING IN THE APP

2.1 Authorization and account management

2.1.1 Registration in the app

To run ActiveMap Mobile, use the application shortcut located in the list of applications of mobile device. After launching, an information window will be displayed on the screen. Click “Get started for free” to register in the app (Fig. 2.1).

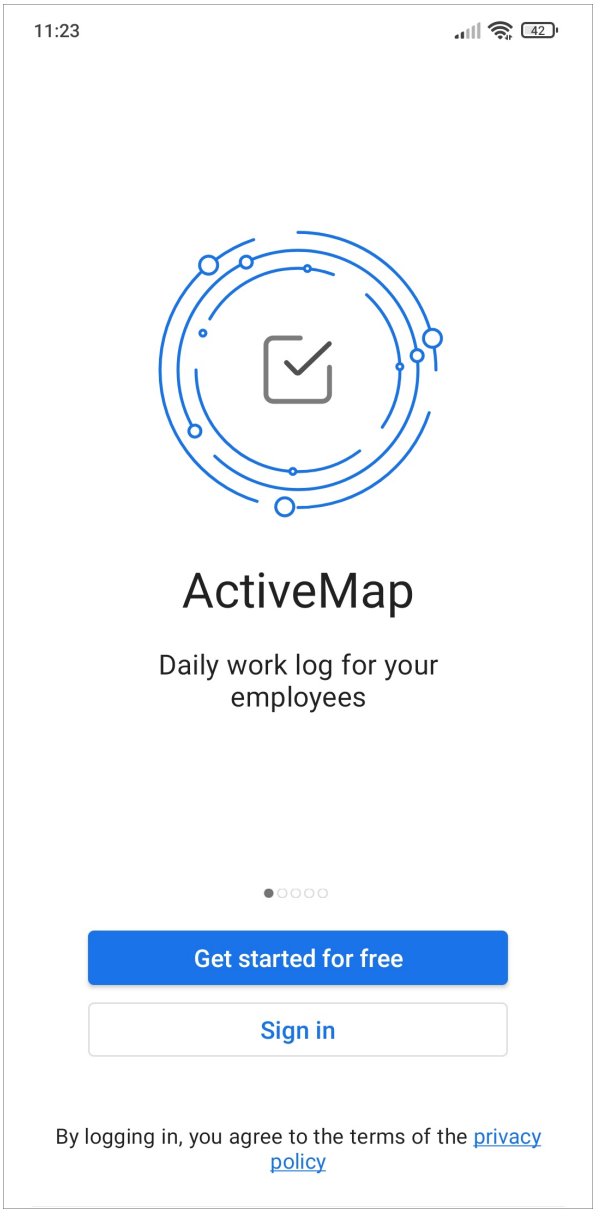


Fig. 2.1: Getting started window in ActiveMap Mobile

User registration in the application is the creation of an account or several accounts on a common server. After completing the registration, you have to follow the link received - the application will automatically authorize under the user account.

2.1.2 Authorization

To add and view tasks, you need to log in to the ActiveMap Mobile application. Authorization is possible only for registered users. See *Registration in the app* (page 8) for more information about registering users in the application.

Attention: Unregistered users have no access to the System.

Click “Sign in” and enter the server address to authorize in the System (Fig. 2.2):

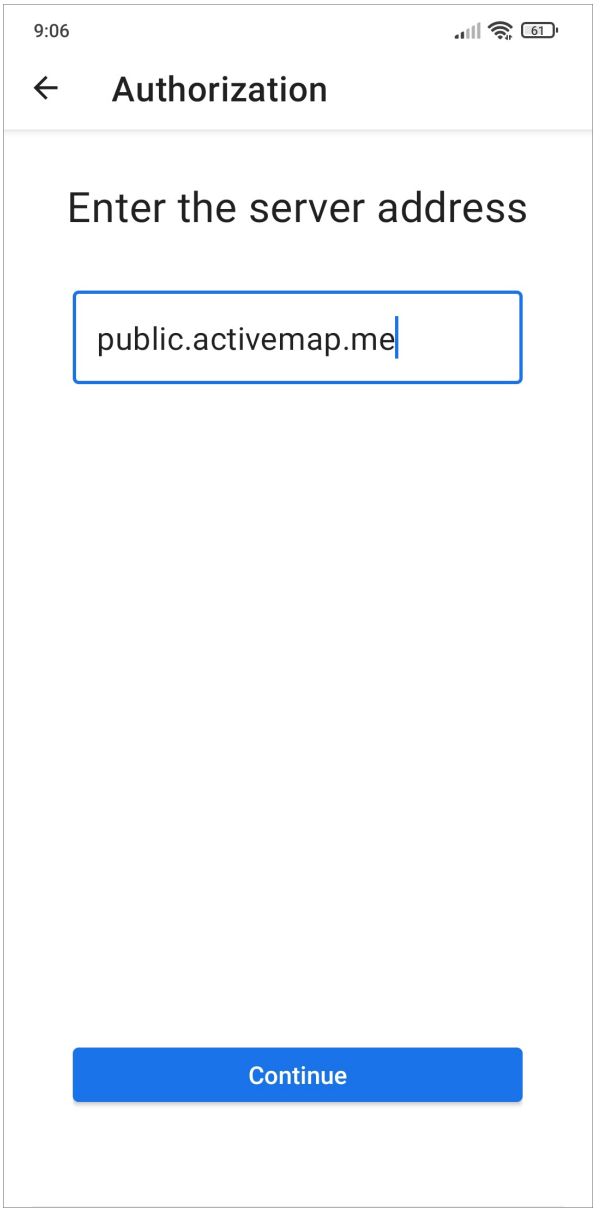


Fig. 2.2: Entering the server address

In the next window enter the user registration data (login and password) and click “Enter” at the bottom of the registration form (Fig. 2.3).

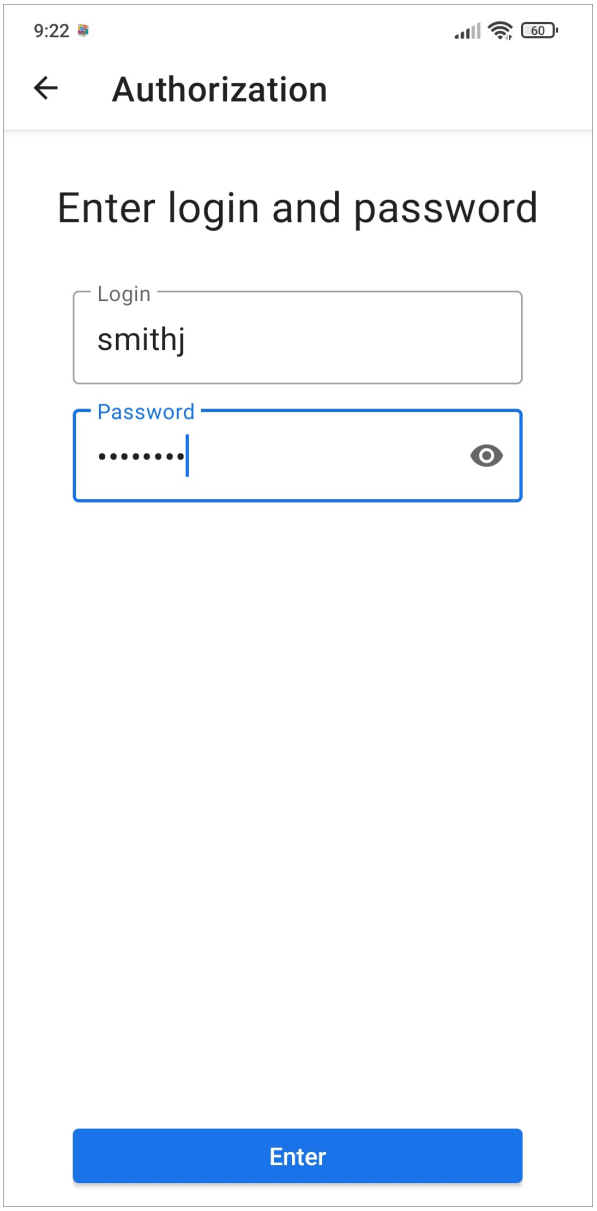


Fig. 2.3: Authorization on the server

The application uses the credentials entered the last time you start the application. If you try to log in to ActiveMap Mobile without entering the specified parameters, the application will display the corresponding messages about the necessity of filling in the fields.

If background geolocation monitoring is enabled in the user account, you need to allow access to the location of the user's device for the application to work correctly at startup. To do this, click "Ok" (Fig. 2.4) in the opened window:

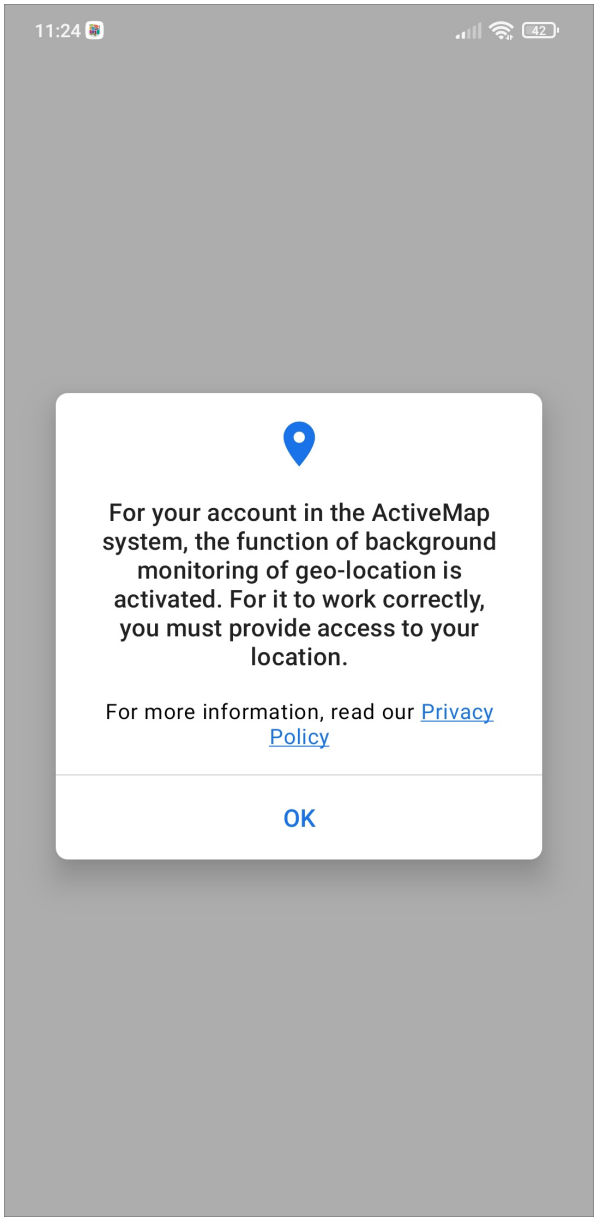


Fig. 2.4: Warning about turning on the location monitoring function

Press “While using the app” or “Only this time” in the next window (Fig. 2.5):

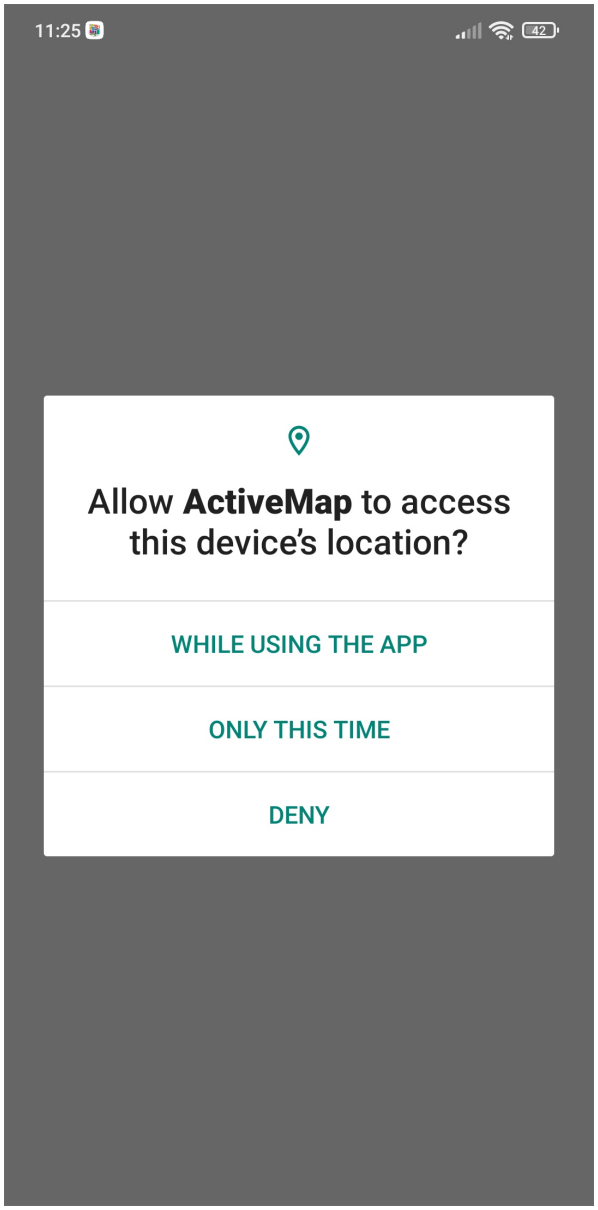


Fig. 2.5: Permission to access the user's device location

The application is ready to work, the user can start viewing tasks created by other users.

It is possible to authorise under more than one account on the same device. The authorisation window will show lists of servers and all added accounts. To authorize in ActiveMap Mobile with saved accounts, just click on the desired account. To remove an account from the list of saved accounts, click "Delete"  next to the account name.

You can change password without logging out of your account if the system forced a password change while working in the application. For further work, you have to enter a new password and click "Confirm".

2.1.3 Account management and roles in the system

To get into the account of an authorized user you have to go to the navigation side menu. User profile placed at the top of the side menu. It shows the user's photo (if any), the server on which the user works, an indicator of the geo-location monitoring, and the user's organization (Fig. 2.6).

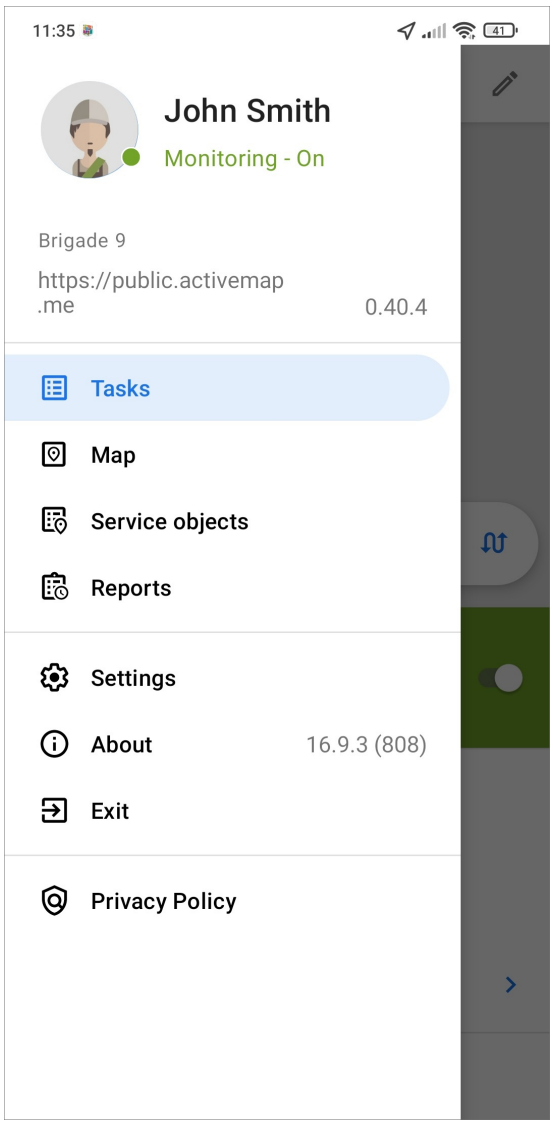


Fig. 2.6: User profile in navigation sidebar

To view full information about a user's account, click on the profile in navigation sidebar. "My Profile" account window will open with the user registration data (Fig. 2.7):

- Full name,
- main organization,
- role in the system,
- login,
- E-mail.

In this window you can enable or disable background monitoring of geolocation, mark the location and view the user's movement history. Clicking on "History of Movements" opens window with map, track and a calendar for selecting the day and time interval, as well as a "Manage layers" button to enable available layers. The user's movements can be displayed as a list. For more information about working with layers and about the history of user moves, see *Working with the map* (page 76) section.

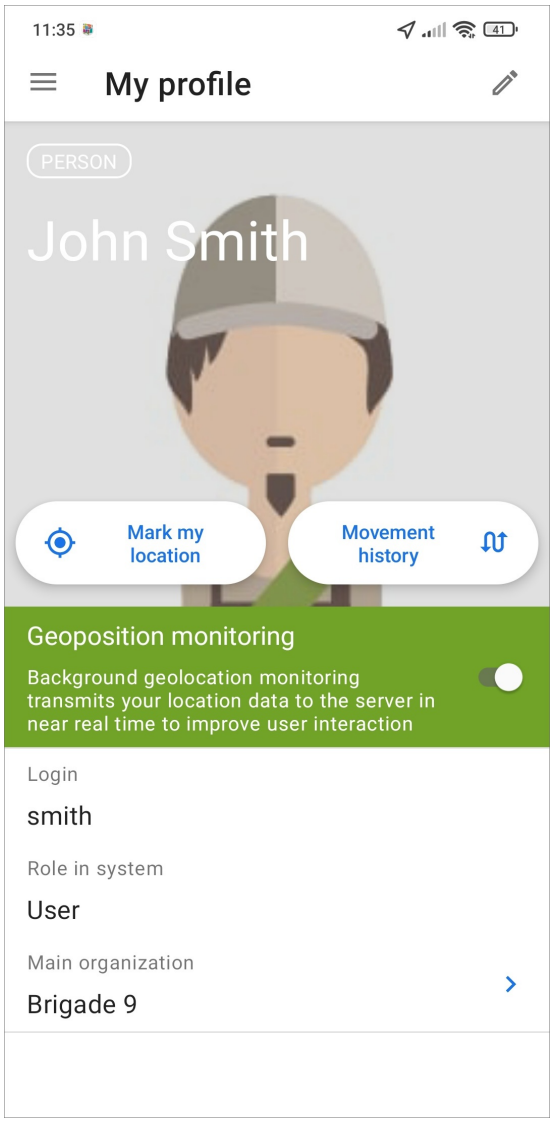


Fig. 2.7: My Profile window

To edit user's account click on the "Edit" button  in the upper right corner. The user can change:

- photograph,
- login,
- Full name,
- telephone,
- E-mail,

- password,
- main organization.

Click "Apply" after making changes. Part of the profile data in the current session (login, role) will remain unchanged in the interface until the next authorization.

Some roles can create users in the navigation menu section: *Map → User Management*. For more information about creating users, see *Creating Users* (page 84).

Roles are assigned by administrators when creating user accounts. They differ from each other in the set of actions they can perform in ActiveMap system components.

- **"Administrator"** creates users with any role, reference tables for tasks (types of work, stages, priorities, additional fields, stickers), distributes access rights to layers and reports.
- **"Cluster Administrator"** creates organizations in his cluster, users with the Cluster Administrator, Organization Administrator, Cluster Inspector, Organization Inspector and Organization User roles. Allows users to view and manage the tasks of other organizations in their cluster, to access layers and reports in their cluster.
- **Organization Administrator** creates users with the Organization Administrator, Organization Inspector, and Organization User roles. Allocates access rights to layers and reports to users in their organisation. Corrects tasks if necessary. Returns tasks for revision.
- **"Cluster Inspector"** checks, assigns and completes tasks within the cluster.
- **"Inspector of the organization"** checks, assigns and completes tasks within the department.
- **"Chief Inspector"** checks, assigns and completes all tasks.
- **"Organization User"** performs or creates tasks.
- **"Client"** creates tasks and does not see tasks created by other users of the organization.

All user roles can be configured to view, edit and manage layers. All roles can create and upload layers.

2.2 Application interface

2.2.1 Task management window

After successfully logging into the application, the task management window will appear (Fig. 2.8).

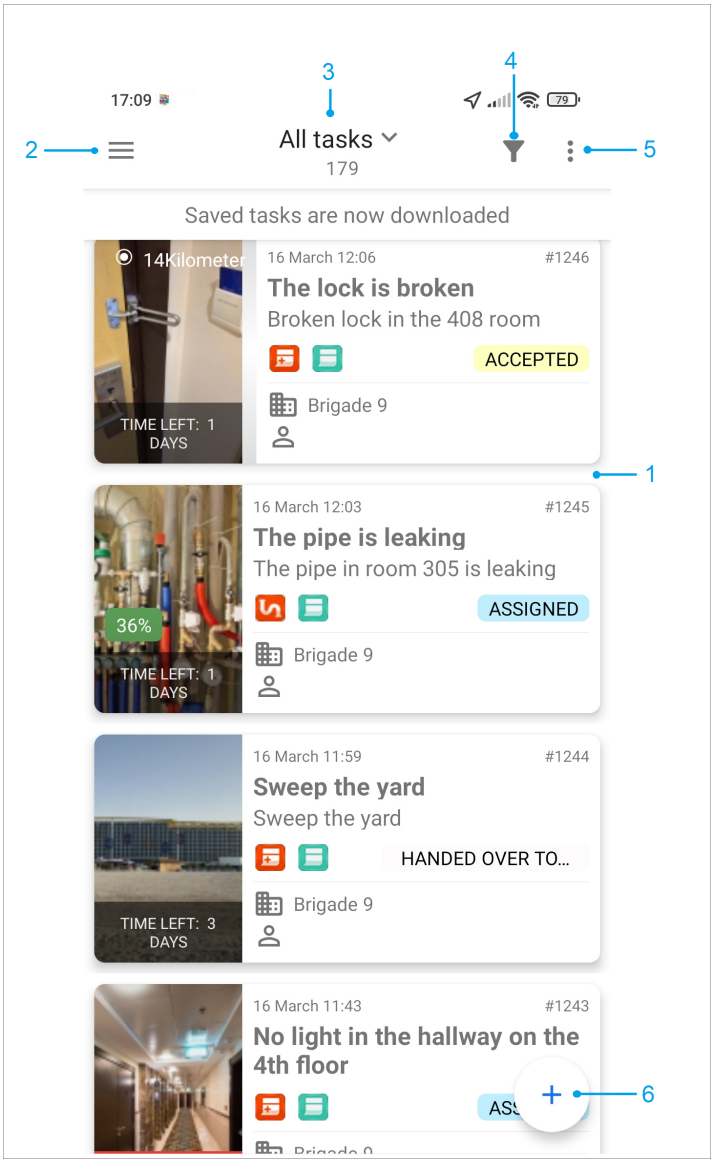


Fig. 2.8: Task management window
1 - task viewing window, 2 - navigation side menu, 3 - task list settings, 4 - task filter and advanced sorting, 5 - window menu, 6 - adding a new task.

Task management window is designed to perform the following actions:

- view tasks created on the server,
- add new tasks and send them to the server,
- modify tasks and send changes to the server.

2.2.2 Sidebar navigation

To open the sidebar navigation, press  in the upper left corner of the task management window.

The side navigation menu consists of the following sections:

- "My profile" - information about the account the user is logged in (*Account management and roles in the system* (page 14));
- "Tasks" - task management window opening (*Task management window* (page 16));
- "Schedules" - creation of planned tasks according to a template. The section is available under administrative and inspector roles (*Schedules* (page 89));
- "Map" - working with tasks on the map and adding geometric objects (*Working with the map* (page 76));
- "Service Objects" - the list of service object layers (*Service objects* (page 68));
- "Reports" - generating and viewing reports created in the ActiveMap web system. The section is available under the roles of administrators and inspectors (*Reports* (page 91));
- "Settings" - configuring ActiveMap Mobile application parameters (*Application settings* (page 101));
- "About" - displaying information about the ActiveMap Mobile application (*About application* (page 99));
- "Logout" - logging out from the user account (*Exiting the Application* (page 107));
- "Policy" - a link to a web page with a privacy policy Activemap Computer Systems Design. You can read it at https://app.activemap.me/policies-privacy-en/. Please read it carefully to understand what information we collect and how we use it.

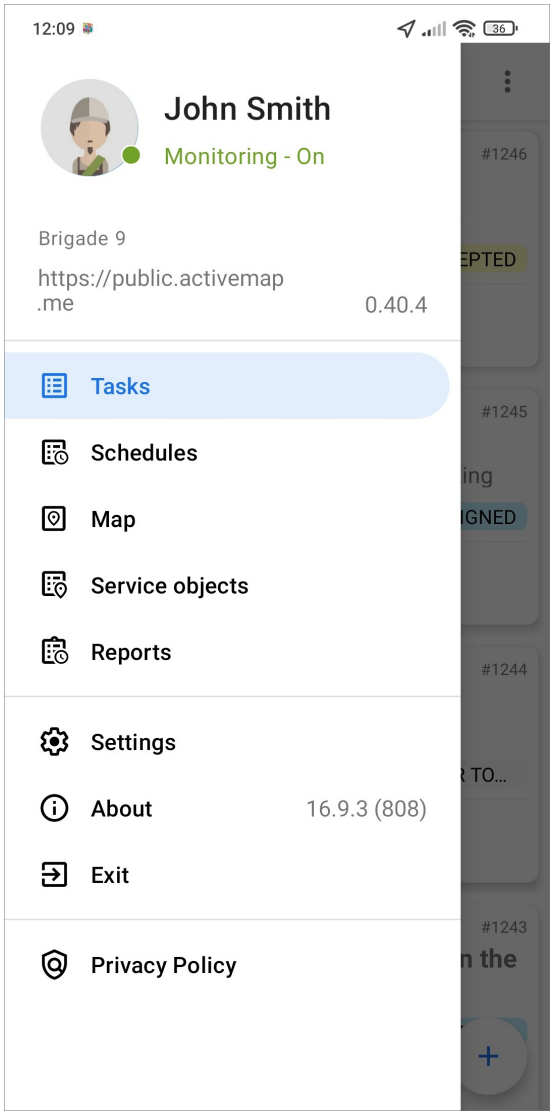


Fig. 2.9: Sidebar navigation

2.2.3 Setting up task lists

You can set up task lists in the task management window. To do this, open the drop-down list at the top of the window (Fig. 2.10):

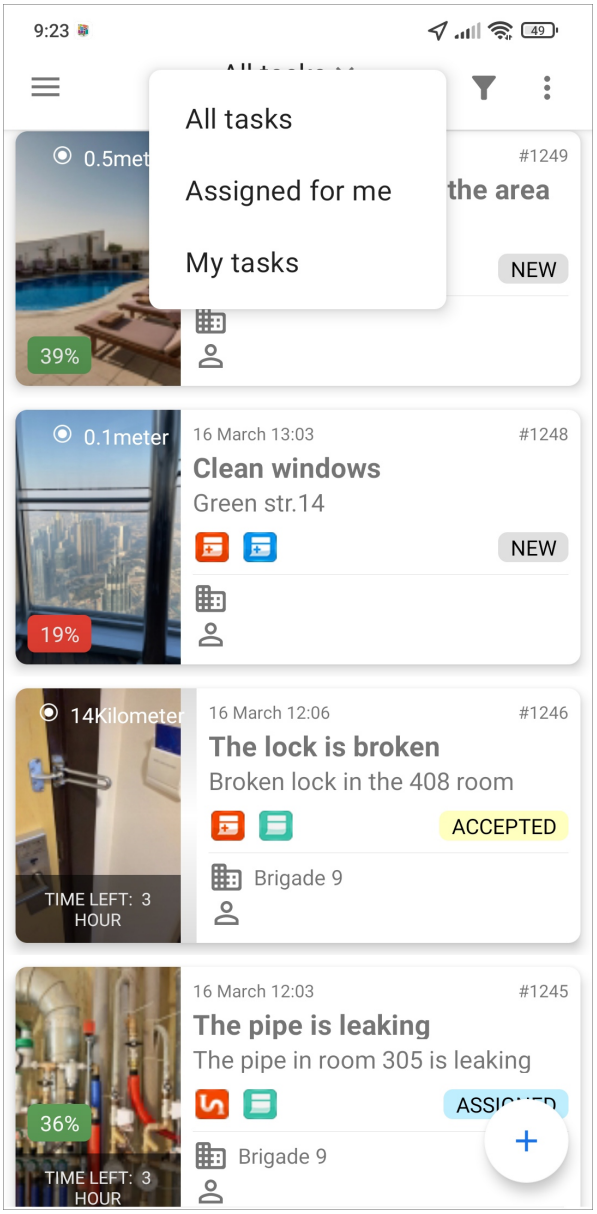


Fig. 2.10: Task list settings

The task lists include the following sections:

- “All tasks” - a list of tasks registered on the server and available to the user;
- “Assigned for me” - a list of tasks assigned to the current user;
- “My tasks” - a list of tasks added by the user, including those not sent to the server (Drafts).

The task lists in the same sections may differ for users with different roles (more about roles can be found in the *Account management and roles in the system* (page 14)).

For an organization user, the “All tasks” group contains only tasks assigned to this user and the tasks created himself/herself. For an organization’s administrator the tasks that are assigned to all employees of his/her organization will be displayed in this group. The details of working with the specified task lists are described in the *Viewing registered tasks* (page 25) section. For each task list the number of tasks is indicated at the top of the window.

2.2.4 Task filter and advanced sorting

The filter button  is used to filter tasks in the list by the following parameters (Fig. 2.11):

- ID - task number in the system;
- text - searching for a task in the list by entered text;
- task status - all possible task statuses in the system (rejected, in progress, closed, all);
- update date - start and end dates of the task update time interval;
- deadline - start and end dates of the task execution deadline time interval;
- creation date - start and end dates of the task creation time interval;
- only overdue - when the checkbox is selected, only overdue tasks will be displayed;
- work stage - all possible task stages (steps) in the system (new, assigned, accepted, completed)[1];
- priority - all possible priorities in the system (e.g. planned, unplanned, etc.);
- work type - all types of work entered in the system;
- custom fields - all custom attributes added to the system (more details in the section *Working with custom fields* (page 31));
- created organization;
- assigned organization;
- assigned executor.

Stages, priorities, and types of work are created by system administrators as refrence tables with several possible values.

[1] refrence tables can be modified according to the individual requirements of the client.

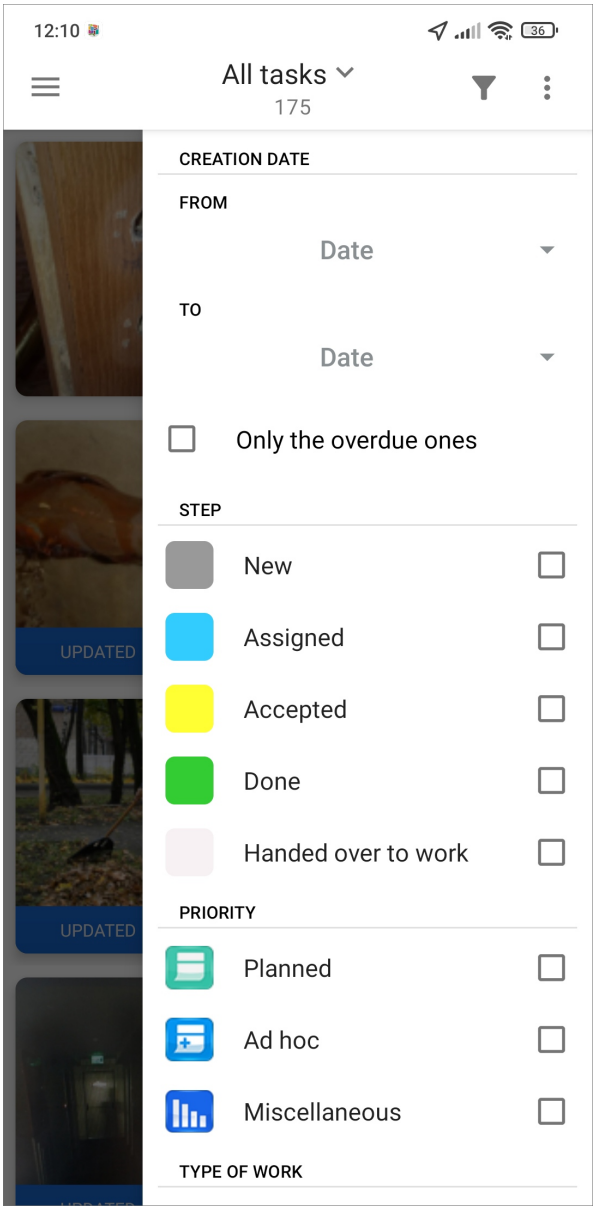


Fig. 2.11: Filter settings window

To work with filters, user needs to select the required parameters, set the parameter values corresponding to the request. The filter will be applied automatically. The “Reset filter” button allows to reset all filtering parameters that have been set.

In the filter window, you can set the task sorting parameters (Fig. 2.12):

- by ordinal number,
- in alphabet order,
- by creation date,
- by update date,
- by deadline,
- by priority,

- by distance[2].

You can also set the sort direction here:

- ascending,
- descending.

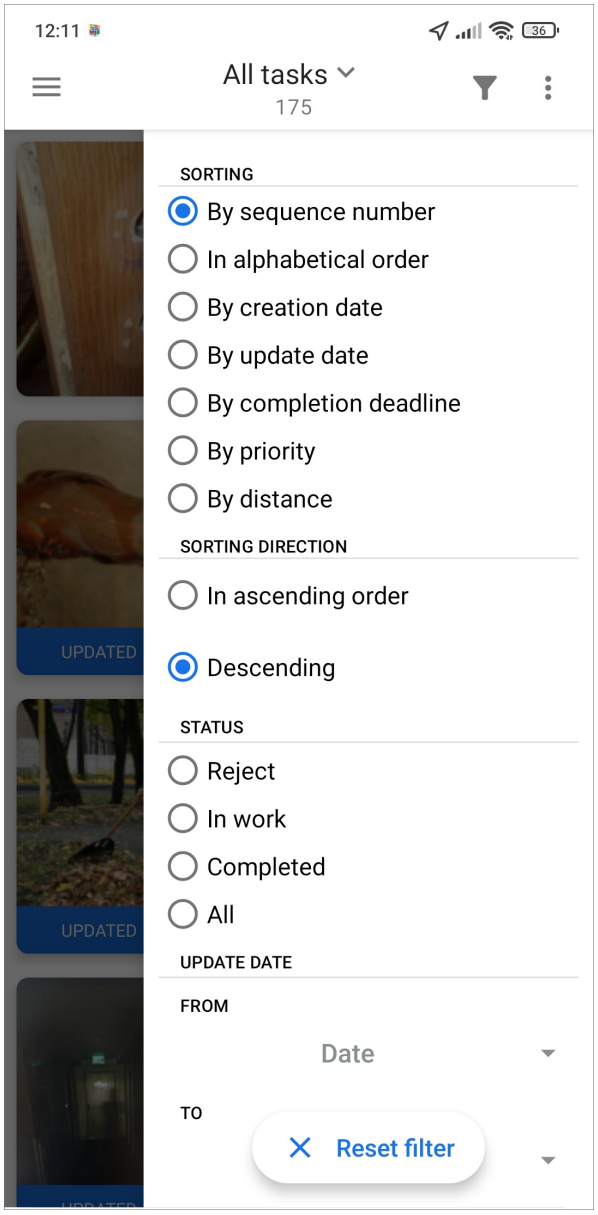


Fig. 2.12: Setting sorting parameters in the filter settings window

[2] in this case, it refers to the distance from the location of tasks to the user. Active - when the user's geolocation monitoring is turned on, inactive - when the geolocation monitoring is turned off."

2.2.5 Window menu

The “Window menu” button  is located in the upper right part of the application screen. The window menu contains the following sections (Fig. 2.13):

- “Synchronize data” - updating information on tasks by synchronizing with the server;
- “Clear the update history” - deleting the “Updated” caption from unviewed tasks modified by other users;
- “Remove drafts” - deleting all tasks with “Draft” status from the list;
- “Send drafts” - bulk sending of all tasks with the status “Draft” to the server;
- “Send changes” - bulk sending of all changes on tasks to the server;
- “Show downloaded” - preview of the list of tasks that will be displayed offline;
- “Download tasks” - downloading tasks to the cache for offline work (including media files of tasks).

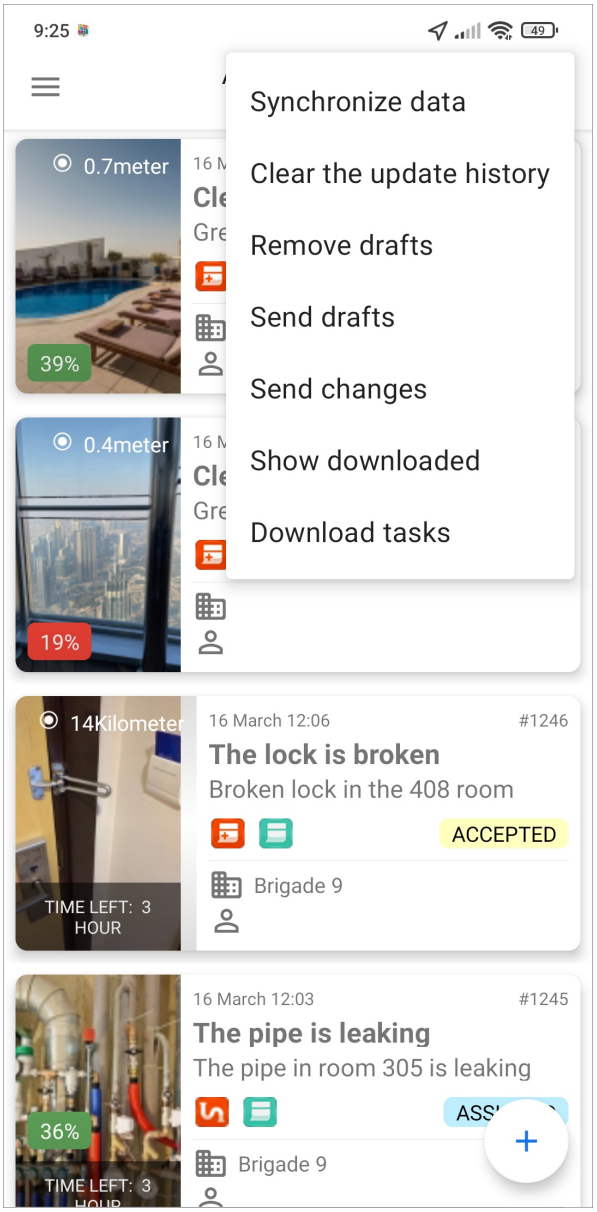


Fig. 2.13: Window menu

2.3 Viewing registered tasks

The "All Tasks" section displays a list of all the registered tasks on the server available to current user. The ability to see and edit tasks is determined by the user's role in the ActiveMap Mobile application. Further we will use the notion of "tasks" only for the tasks available to the user according to his/her role in the system (more details about the roles in the system are described in *Account management and roles in the system* (page 14)).

By default, tasks in the list are arranged in descending order of their ordinal number. Tasks are arranged in a "tile" view. The tile for each task contains the following information (Fig. 2.14):

- the main photo of the task (if available);
- distance to task destination (only for tasks with geolocation);

- unread task icon (blue envelope icon);
- date and time of task creation;
- task number;
- labels:
  - “Overdue” - for overdue tasks, with the number of days overdue;
  - “Modified” - for tasks modified by the user if the changes have not yet been sent to the server or an attempt to send the changes to the server has failed);
  - “Updated” - for tasks modified by other users;
  - “Draft” - for tasks that have not been sent to the server;
  - “Remaining: number of days” - how many days are left for completing the task;
  - “Photo Result Match Score” - the minimum percentage of similarity of the added photos to the photo-sample.
- task title;
- short summary of the task;
- work type icon;
- task priority icon;
- work stage (step);
- the organization the task is assigned to;
- the user the task is assigned to.

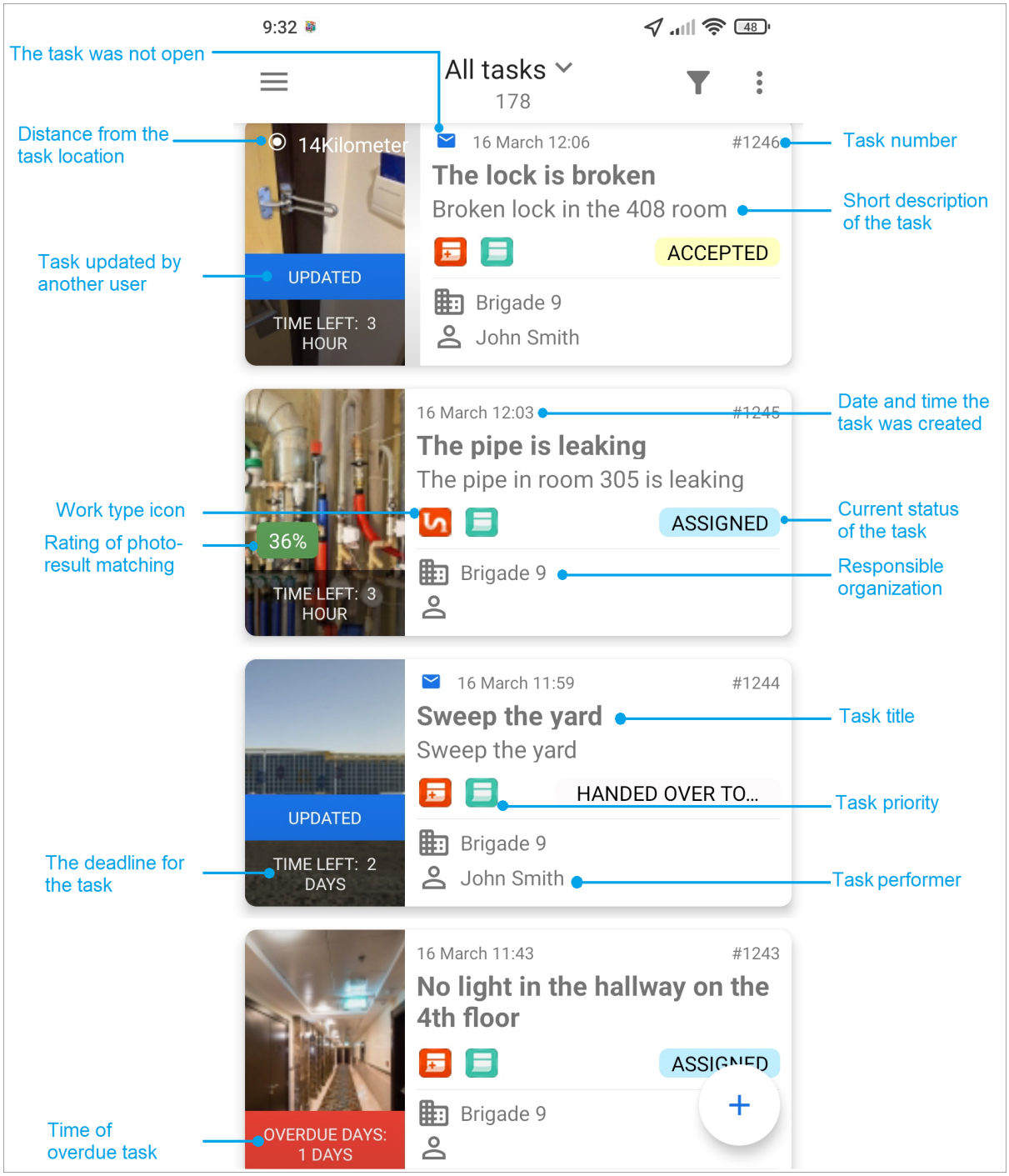


Fig. 2.14: Scheme of the task management window

The task deadline can be set manually when creating (assigning) the task or filled in automatically depending on the type of work. All these settings are configured by the administrator of the organization through the ActiveMap system's web interface.

The task list is updated using a swipe gesture from top to bottom. You can use sorting and filters to customise the display of tasks according to the user's preferences. Details on how these tools work can be found in the sections *Setting up task lists* (page 19) and *Task filter and advanced sorting* (page 21).

2.4 Creating tasks

Creating new tasks is implemented in the application using two approaches:

1. Standard - creating tasks (with or without linking to an object) from the task management window (*Creating new tasks* (page 28)).
2. From layer objects - creating tasks with object attachment from “Service Objects” or “Map” windows (*Service objects* (page 68)).

2.4.1 Creating new tasks

To create a new task, click on the  button located in the bottom right corner of the task management window. The “Creating task” window will open (Fig. 2.15).

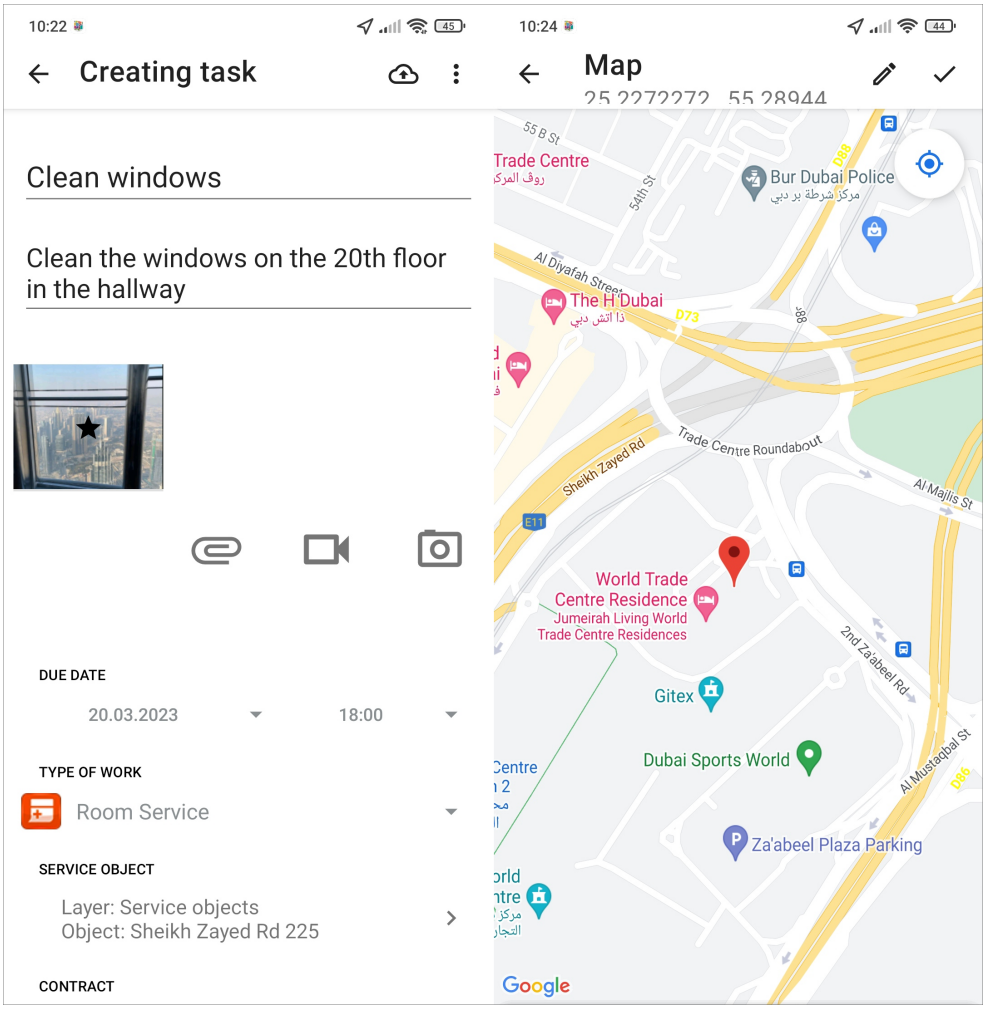


Fig. 2.15: Creating task window

The task template includes the following fields to fill in:

- title;
- task text;

- deadline;
- type of work[1];
- service object (layer name, service object name);
- priority (e.g. planned, unplanned, etc.);
- assigned organization (if there are rights to assign organizations for execution of tasks);
- assigned performer (if there are rights to assign task performer);
- attachment of media files to the task (more about working with media files: *Adding files and media* (page 33));
- custom fields available for the selected work type (more about custom fields: *Working with custom fields* (page 31));
- location of the task object on the map;
- contract (if available for the current role).

To send tasks to the server, click on  . Tasks that have been saved but not sent to the server will be marked as "Draft" and highlighted in green in "My tasks" list (Fig. 2.16, more about customizing lists: *Setting up task lists* (page 19)). The application implements background sending of new and modified tasks to the server. This means that if a group submission of tasks or changes is initiated, the application will still be available for work, and there will be no need to wait for the upload to the server to finish.

[1] all refrence tables can be changed according to individual Customer requirements.

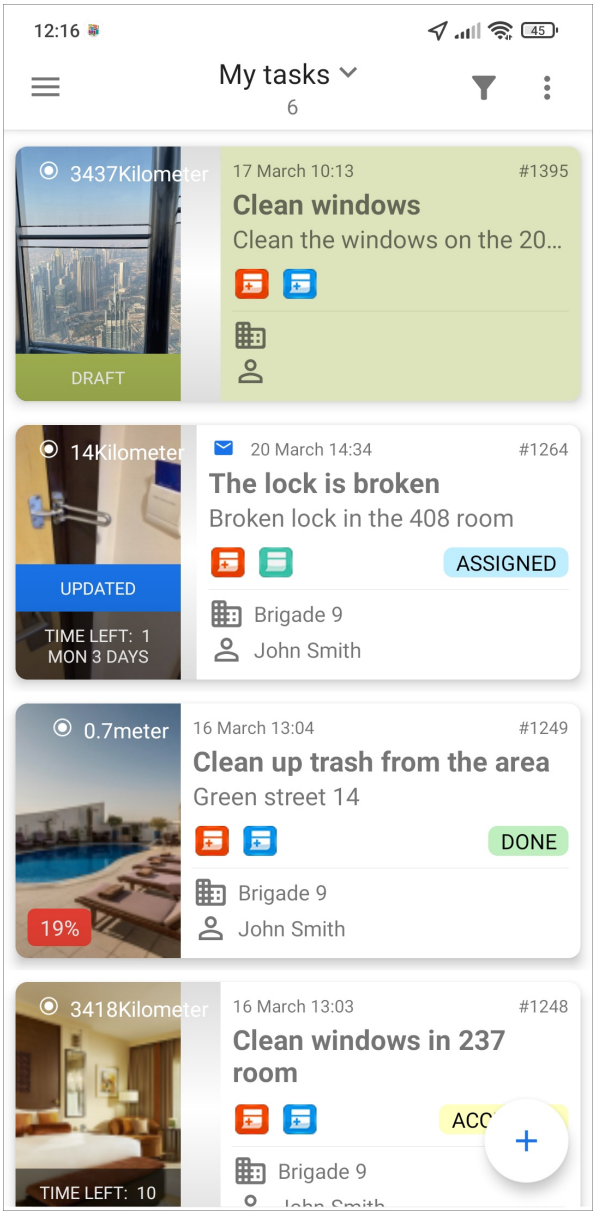


Fig. 2.16: My tasks

The access rights to fill in part of the fields depend on the role of the user. Roles are regulated by the Cluster or Organization Administrator (more information about user roles: *Account management and roles in the system* (page 14)).

On tablets, the "New task" window is divided into two parts: basic information about the task is entered on the left side of the window, and additional information (due date, type of task, service object, priority, assigned organization, assigned performer, information in additional attribute fields) is entered on the right side of the window (Fig. 2.17).

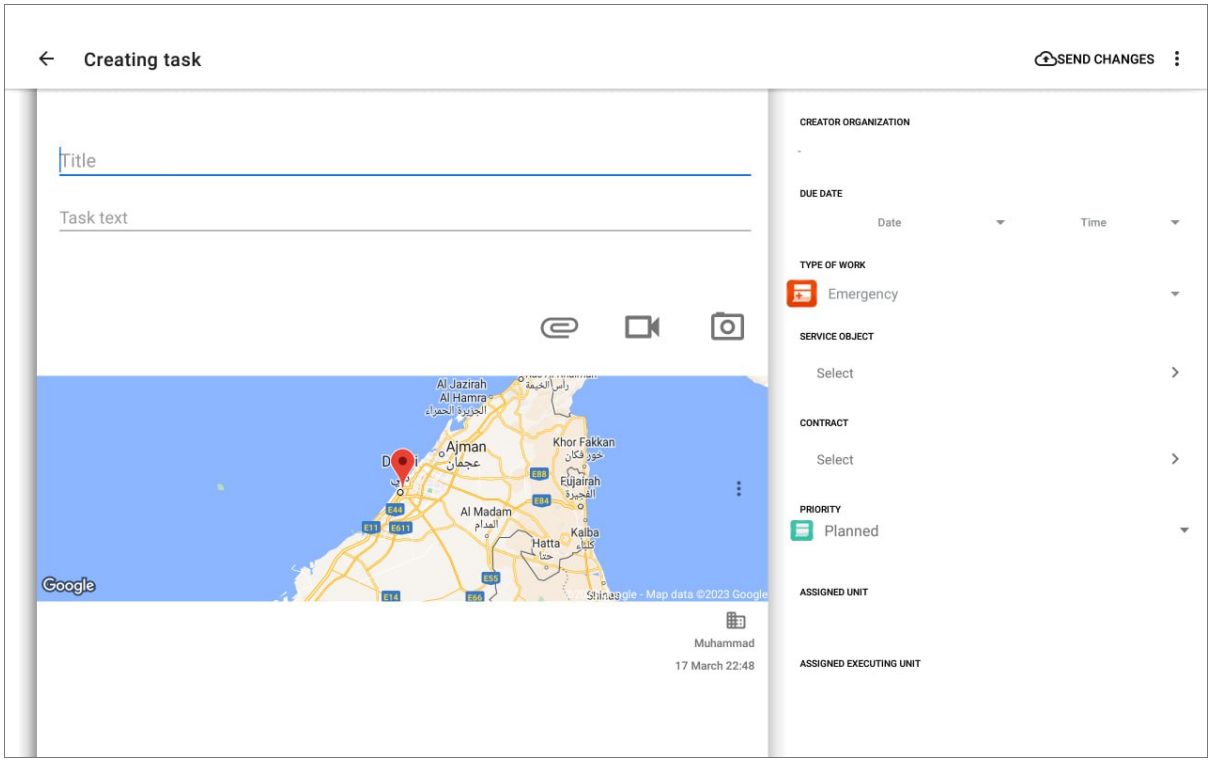


Fig. 2.17: “Creating task” window on tablets

2.4.2 Working with custom fields

Users with administrative access rights may add custom fields via the ActiveMap web interface in the “Administration” -> “Jobs” -> “Custom fields” tab. The following field formats are supported:

- integer,
- boolean value,
- real number,
- date,
- list (allows selection from a drop-down list),
- string,
- phone number,
- text,
- bar code,
- geometry (to add additional geometrical objects to the map - point, line or polygon).

A default value or a regular expression can be specified for all custom fields (except for the geometry format field). A regular expression is a pattern string that specifies a template for the custom field. It is also possible to configure a list of tasks (by work type) for which the custom field will be available. Custom attribute fields can be grouped. The attribute field

can be made mandatory to fill in. When creating a custom attribute field, the minimum and maximum length of the field can be specified.

After adding new custom fields via the ActiveMap web interface under “Administration” you have to update the data in the task management window (“Window menu” -> “Synchronise data”). After updating the data, the custom fields will be displayed in the “Task” and “Draft” windows for tasks with the corresponding task types. The custom fields will be located in the right sidebar, which you can open in the task window using the custom fields button. Custom fields will be available for filling and editing if the user has appropriate rights (Fig. 2.18).

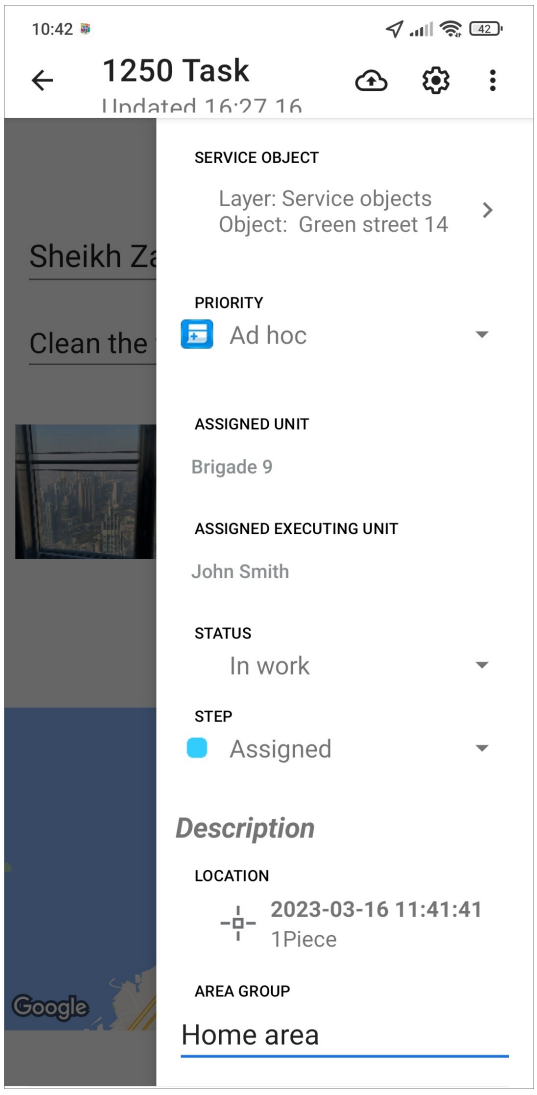


Fig. 2.18: Filling the custom fields

To create a new geometric object and attach it to a task, you have to click on the “Create” button, located in the “geometry” data type field. For more details on geometric objects, see *Adding geometric objects on the map* (page 59), *Adding point objects* (page 65), *Adding linear and polygonal objects* (page 66).

2.4.3 Adding files and media

There are several buttons for attaching files (Fig. 2.19):

- **“Add media”**  ,
- **“Add video”**  ,
- **“Add photo”**  .

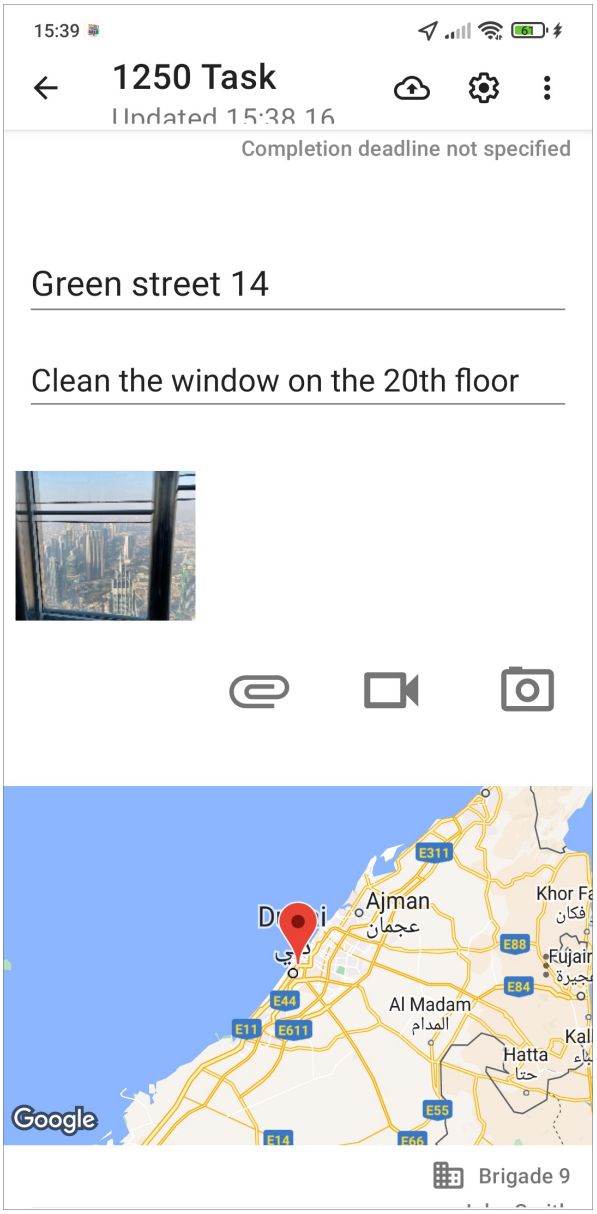


Fig. 2.19: Adding media files to a task

Clicking on **“Add Media”** allows to choose a file from those saved on the device or to create a new one:

- photo from the gallery[2],

[2] The ability to add files from the gallery is determined by user rights.

- make a photo,
- video from gallery[3],
- record a video,
- record a timelapse video,
- audio from collection,
- record audio,
- signature,
- add file,
- invoice.

When choosing the options **"Photo from Gallery"**, **"Video from Gallery"**, **"Audio from Collection"**, just specify the location of the file in the gallery. The ability to add files from the gallery is determined by user rights.

When selecting the attachment type **"Record video"** the user's device will switch to video recording mode using the device's standard camera. When "Save" is pressed, the recorded video will be attached to the task. When choosing the type of attached file **"Record Timelapse Video"**, the user's device will switch to the mode of recording accelerated video - timelapse video. In the timelapse video recording mode, the geographic coordinates of the camera location are recorded simultaneously with the accelerated video. This makes it possible to create tasks from the frames of this video with the attachment of the current frame (as a main photo of the task) and geolocation in the ActiveMap Desktop application. The user makes a record that characterizes the task. After stopping the video recording, it will be attached to the task. When the quick access button to the video recording  is pressed, the user's device will switch to the video recording mode using the implemented camera interface in the application.

When selecting the attachment type **"Record Audio"** the device switches to sound recording mode. After creating a recording that characterizes the task, stop the recording by pressing the  button, then press "Upload"  to attach the recording to the task.

When selecting the "Signature" file type, the device switches to drawing mode. You can add your signature by drawing it directly on the device screen. To change the brush color, click "Manage"  , choose the desired color from the color palette by moving the slider to the left or right, and click "Done" (Fig. 2.20). Click "Save"  to save the signature. If something goes wrong, click "Clear" to start again.

[3] The ability to add files from the gallery is determined by user rights.

Fig. 2.20: Creating media file of the “Signature” type

Selecting **“Add File”**” allows to attach documents in txt, rtf, docx, pdf, xlsx, or pptx formats to the task.

Selecting **“Take a Photo”**” or pressing will put the device in photo mode. A sticker can be attached to the photo. Sticker is a text note on the photo. It is used in cases where it is necessary to quickly track the before and after state of tasks or if a sample is required for creating photos. When “Save” is pressed, the taken photo will be attached to the task (more detailed instructions for working with the built-in camera are described in the section *Using the built-in camera of the application* (page 37)). You can use the standard camera of the device to create high-resolution photos in the application. To do this, the appropriate settings must be applied in the ActiveMap Web web system. The standard camera also has the ability to attach stickers to photos.

The attachment type “Invoice” is available for selection if the online work cost calculation methodology is used. This module requires additional settings based on the list of services

and materials used by the user's organization. More information about working with the module is described in the chapter *Invoice module* (page 92).

A long press on the icon of a media file attached to a task will bring up a menu bar for working with that file (Fig. 2.21).

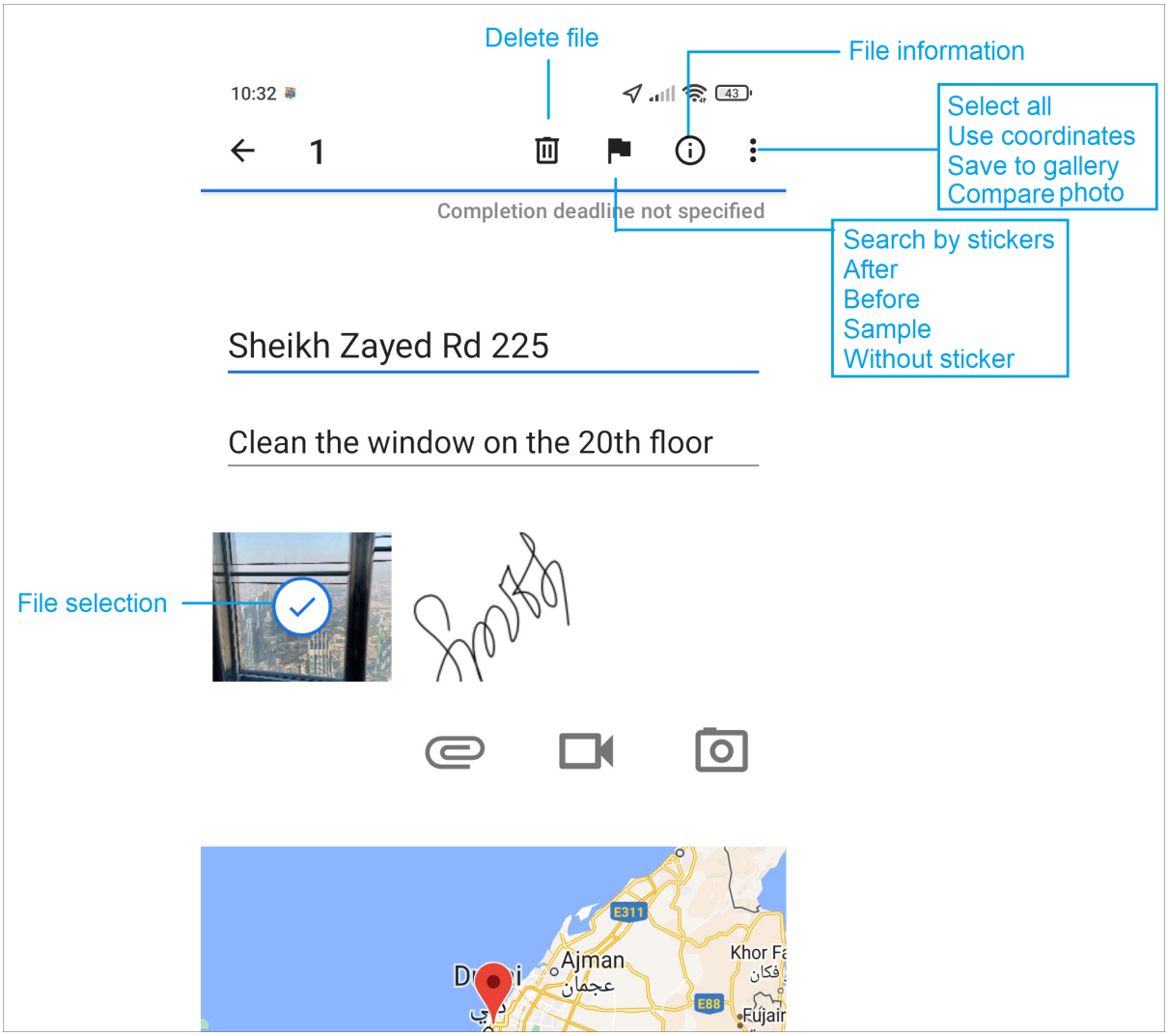


Fig. 2.21: Scheme of the "Creating task" window in the mode of working with media files

Pressing "Window menu"  will open a list of functions (the list may vary according to user rights and file format):

- "Detach sticker" - move the file to the "no sticker" category;
- "Select all" - select all files attached to the current task;
- "Use coordinates" - update the task coordinates from the added photo if the media file has geolocation;
- "Save to gallery" - save the file to the user's mobile device in the corresponding software folder;
- "Compare angles" - conduct online comparison of photos.

Clicking on the information button opens a window with detailed information about the media file (Fig. 2.22). The information in the “Create” and “Attach” tabs is filled depending on whether the media file was created directly from the app or attached from the device’s file storage.

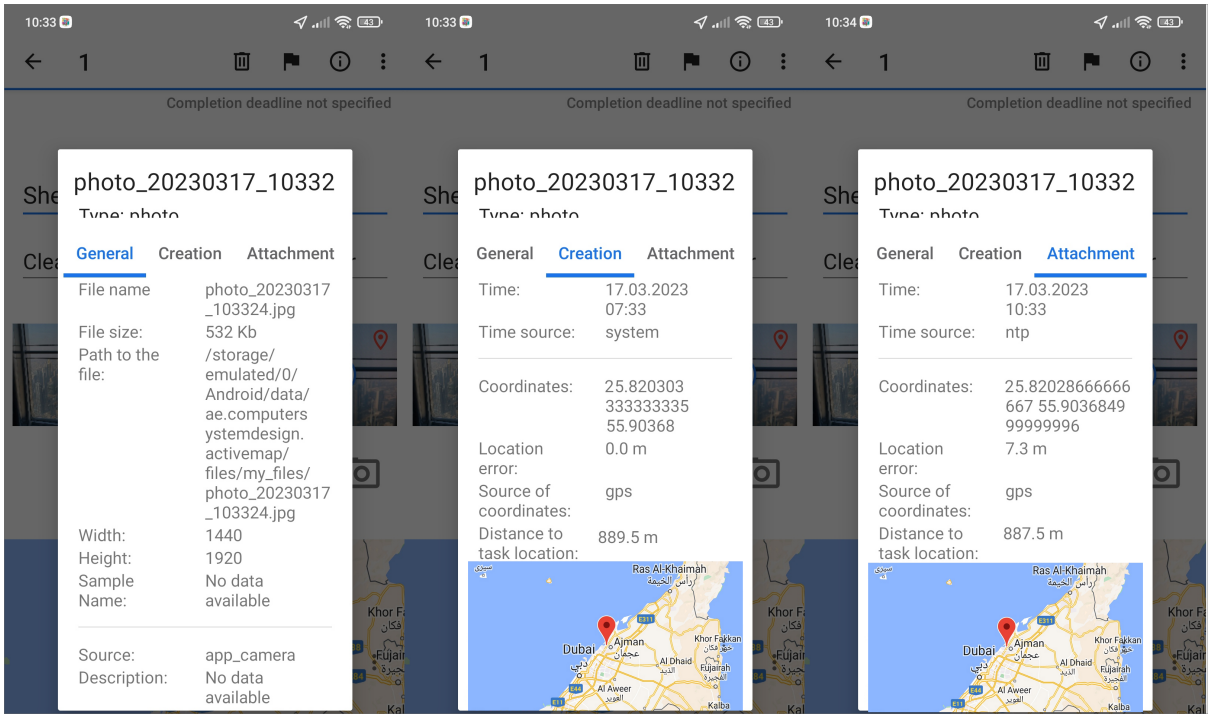


Fig. 2.22: Media file information window

Clicking on you can add a sticker to the photo (before, after, sample).

Added media files can be removed using the “Delete” button .

2.4.4 Using the built-in camera of the application

The built-in camera application is designed for additional control over the task execution process. When using a custom camera, information about the date, time, and coordinates of the photo capture is recorded. By default, when using this camera, GPS must be turned on and fake locations must be disabled.

Select “Create photo” on the media file attachment panel to switch to camera mode (Fig. 2.23), or press the camera shortcut button .

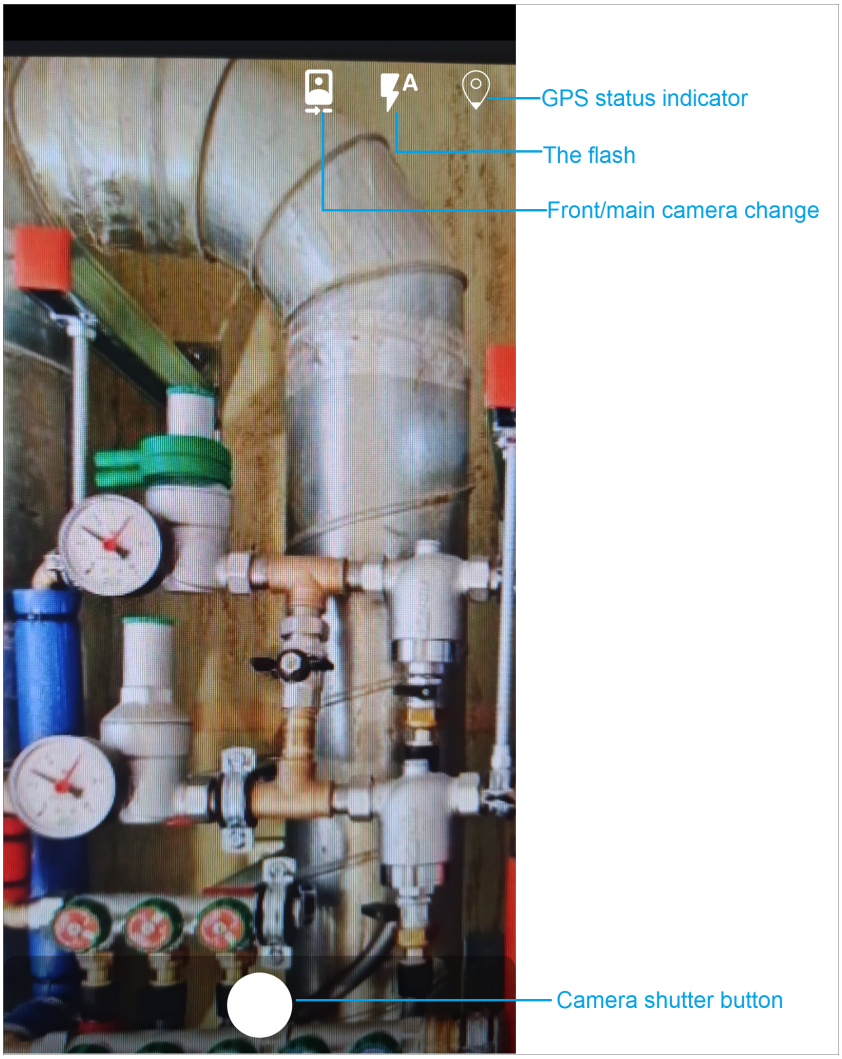


Fig. 2.23: Using the app's built-in camera

The GPS status indicator can be of two types:

 - location monitoring is on and correct data is being transmitted to the server.  - no current GPS data is available, or location monitoring on the device is disabled.

In camera mode, you can also customize the flash mode and switch the camera (main/frontal). To configure the flash mode, select one of the modes (Fig. 2.24).

Fig. 2.24: Flash mode selection menu

Camera usage conditions are set up through the web system ActiveMap. The settings allow to set various requirements for taking photos (maximum distance to the task point, stamping with the exact time, date, etc.), as well as define them for specific groups or individual users. When the established requirements are violated, the application may display the following informational windows (Fig. 2.25) and not take pictures until the conditions are met:

- the task point is far from the photo taking point,
- the geoposition monitoring of the device must work correctly during task execution.

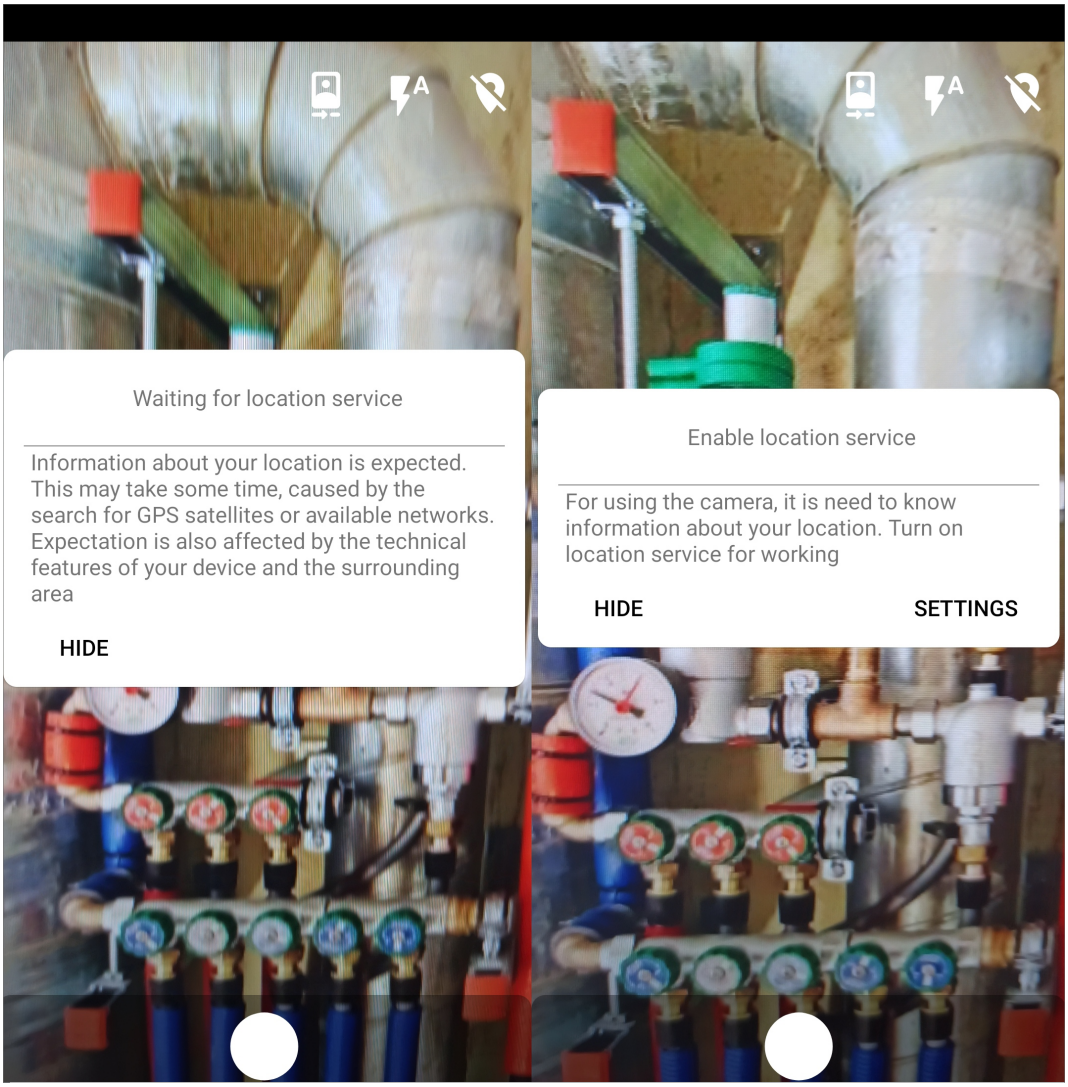


Fig. 2.25: Examples of messages about violations of the built-in camera usage restrictions

Once the photo is taken, the photo editing toolbar opens (Fig. 2.26). Upon pressing “Save”, the photo is processed and attached to the task. The date and time when the photo was taken is displayed on the photo.

Fig. 2.26: Photo editing mode

2.4.5 Selecting service objects

You can attach the task to a service object in the application. You can do this by clicking "Select" in the "Service object" field. By default, the list of objects in the "Service objects" layer will open. If this layer is the target for the user, simply select the desired object. If you click on the "Service objects" field, you can select another layer from the available ones. For convenience, there is a "Service layers only" switch at the top of the layer selection window. When it is enabled, only layers with the "Service Object" status become available. After selecting a layer, you can sort, filter or search for an object. You can read more about how to use these tools in the *Service objects* (page 68) section.

After sending the task to the server, information about the object will be displayed in the task: the name of the object, which can be configured in the ActiveMap Web web component, and the name of the layer. Before sending the task, there will be only identifiers of the layer and object.

It is possible to see all the tasks associated with object. To learn more about how to do this, read the *Service objects* (page 68) section. It also describes how to create a task from a layer object.

2.4.6 Attaching the contract

The list of contracts is created by Administrator or the Cluster Administrator, they operate within the cluster. The Chief Inspector, Cluster Inspector, Administrator and Assigned Organization Inspector have rights to view the contract. Users who see the task created under the contract will also receive minimal information (id, title). An operational task and a scheduled task can only be created within the same contract, it is not possible to add two contracts. But multiple tasks and schedules can be attached to one contract. When deleting a contract, operational tasks created under it are saved (the name of the contract is displayed in the task), already created scheduled tasks are also saved, but the schedule itself will be deleted.

Important: When creating a task with a contract, be sure to select the service object and type of work specified in the contract. Otherwise, a task creation error will occur.

To attach a contract, press "Select" in the contracts block, find and mark the required contract (Fig. 2.27). Before sending the task to the server, you can change or delete the contract by clicking on the cross to the right of it. Once the job has been sent to the server, you cannot edit or delete the contract. When attaching a contract, the assigned organization will automatically be filled in (after sending the task to the server). If the entered data do not correspond to the contract, the application will generate an error and the task will not be sent until all the discrepancies are corrected. It may be necessary to correct the contract settings (service objects and work types specified in the contract) rather than the task itself.

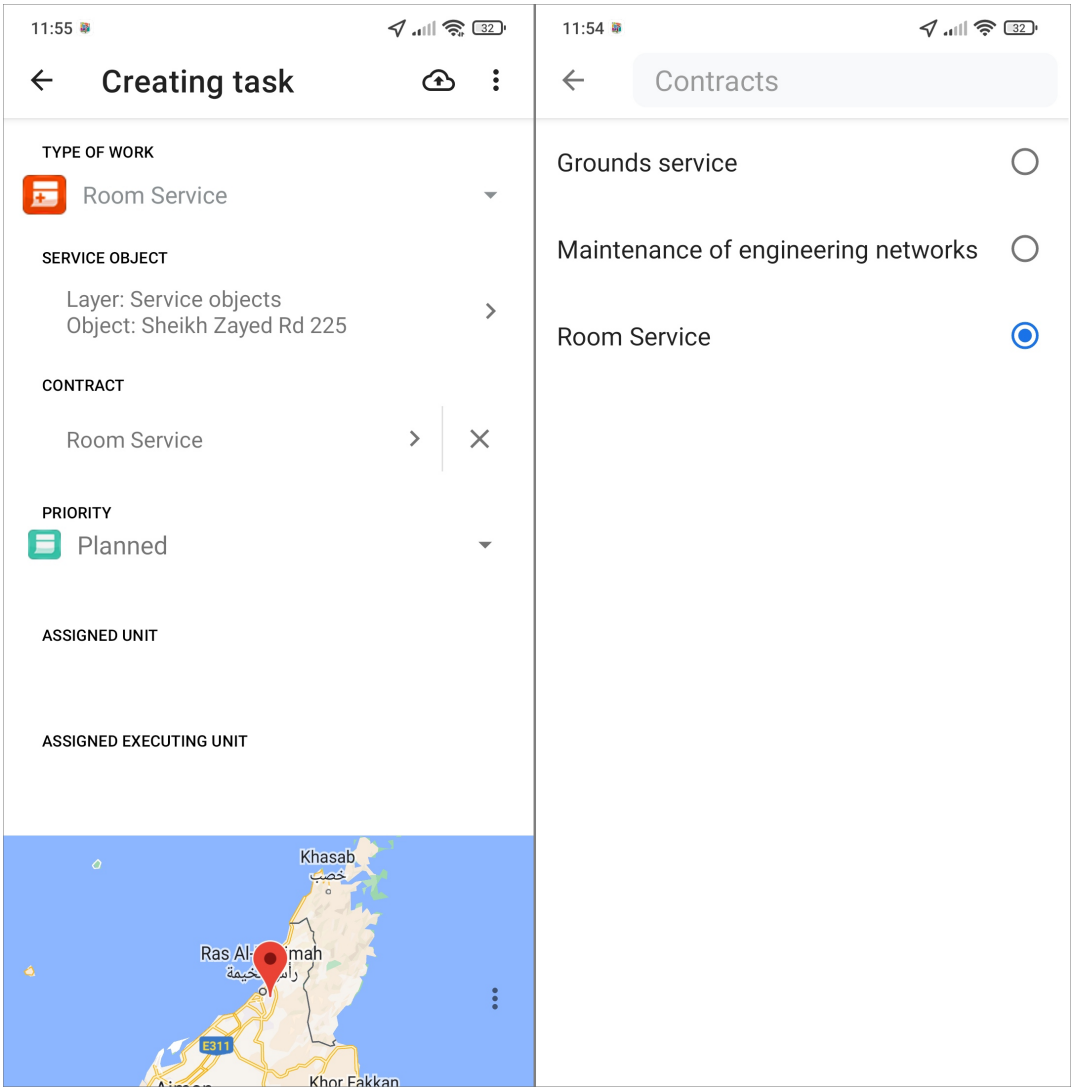


Fig. 2.27: Attaching a contract

2.4.7 Geolocation of tasks

The application provides the opportunity to geographically positioning the added task to the destination location. If you have not previously set up location sources on the device, you need to configure them to determine the location of the user's device. If the navigation signal receiving conditions are good, the user's location will be marked with a geolocation mark on the map (Fig. 2.28) after a few seconds.

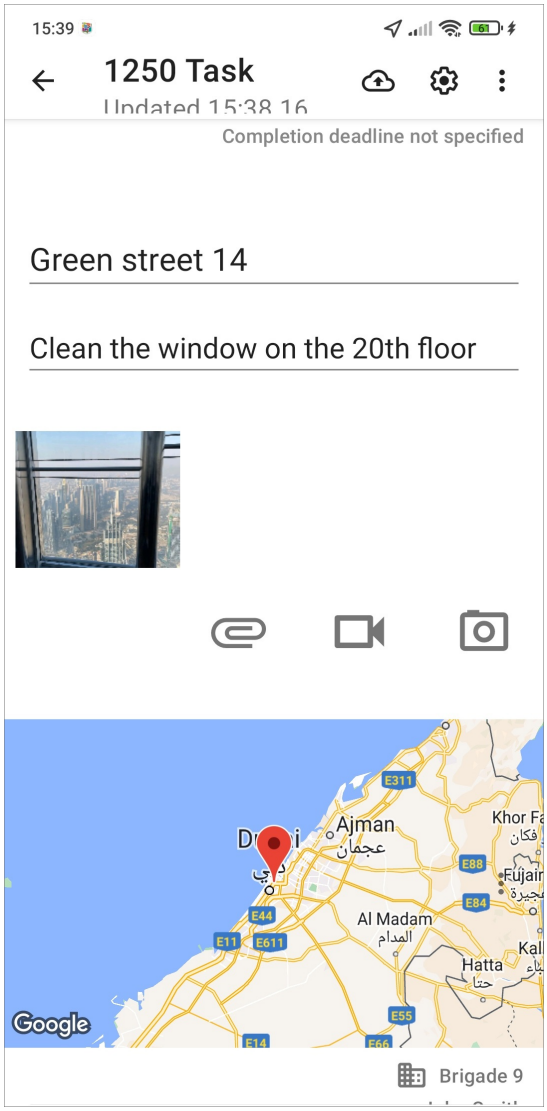


Fig. 2.28: Displaying a location in the task window

By default the user's current location will be attached to the task. To change the location you should go to the "Task map" window that opens when you click on the map in the task window. Geographic coordinates will be indicated in the upper part of window (in the Longitude/Latitude coordinate system on the WGS 84 ellipsoid - EPSG:4326). To change the location on the map, just mark another location by long-pressing the desired location and pressing the "Save" button ✓ in the upper right corner (Fig. 2.29).

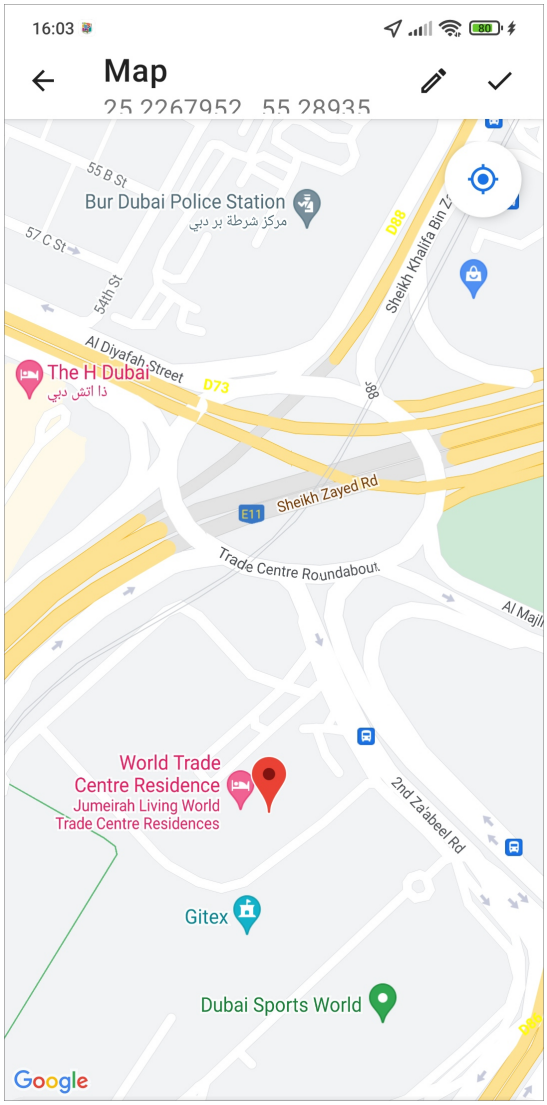


Fig. 2.29: Displaying a location in the task map window

To change the coordinates precisely, press “Change of coordinates”  . In the “Change coordinates” window you can choose from a drop-down list the format in which the coordinates should be entered. You can enter/edit the exact coordinates in the selected format (Fig. 2.30) in the corresponding fields. To change the hemisphere, simply click on the north/south hemisphere (west/east hemisphere) image to the left of the latitude (longitude) input field. When the hemisphere is changed, the sign of the corresponding coordinates shown at the bottom of the window will change. When you have finished entering/editing the coordinates, press “Edit” and save your changes  .

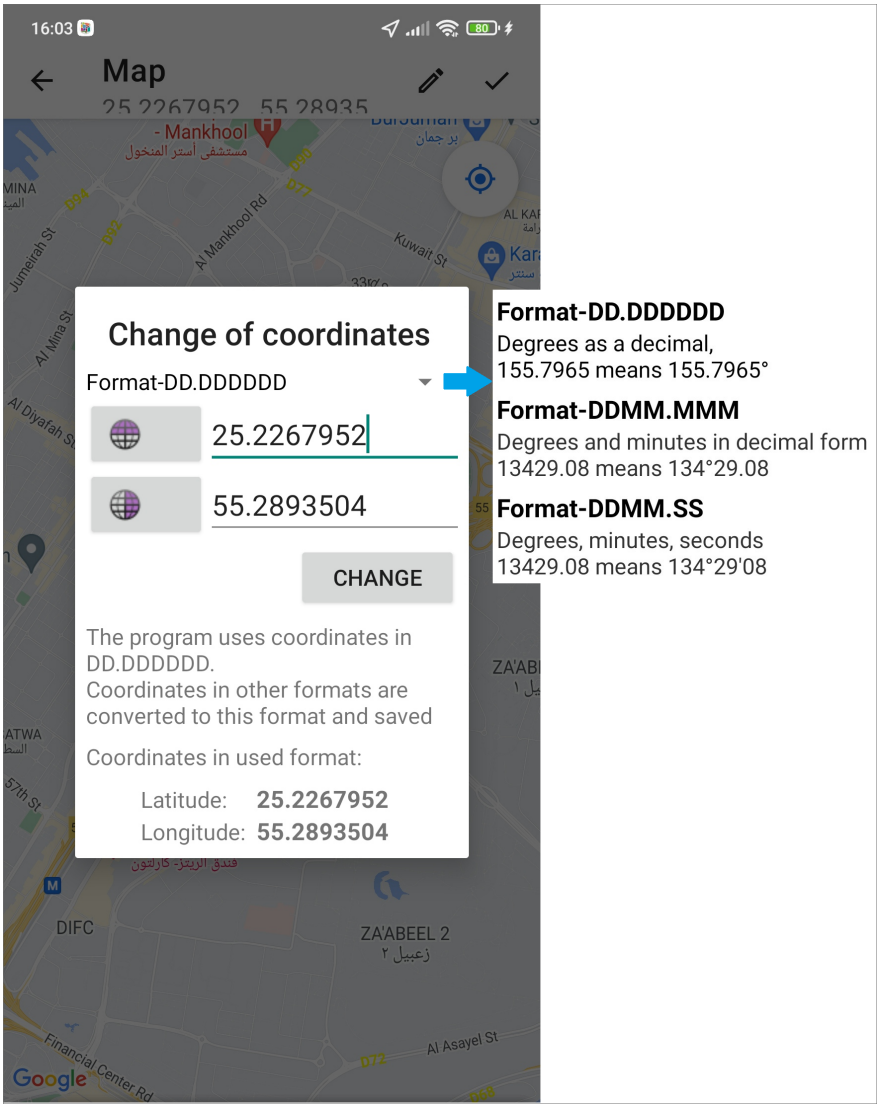


Fig. 2.30: Changing coordinates

The task can be saved and sent to the server without geographic coordinates. After entering information on the task, attaching files and location, the task will be automatically saved and added to the list of own tasks (drafts) in the “My tasks” section. To send jobs to the server, click the “Submit” button located at the top of the task window.

The application has an option of applying photo coordinates to the task. To do this, you need to make a long press on the photo in the assignment, open menu , select “Use coordinates” and confirm the action by pressing “Use”. The coordinates of the task will be updated if the media file is georeferenced.

2.5 Editing and managing tasks

2.5.1 Viewing and editing a task

The ability to edit task fields and manage the task depends on the user's role. For more information on user roles, see *Account management and roles in the system* (page 14). To send the changes made to the task to the server, click "Submit", otherwise the changes will not get into the system, but will remain only on the user's device.

Clicking on the task you want to edit opens the task window (Fig. 2.31). The task window is used to view, edit and manage detailed information about the task (see details in *Viewing registered tasks* (page 25) and *Creating new tasks* (page 28)):

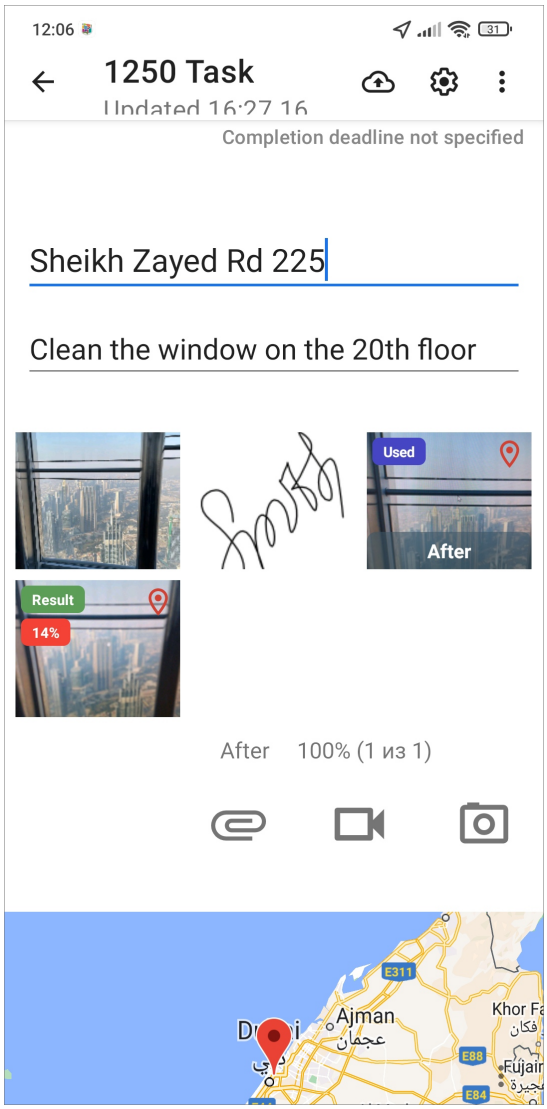


Fig. 2.31: The task window in view and edit mode

In the task window you can edit the task title, text and location, work with media files and add comments. The task window also contains the right sidebar of task information, where you can edit other fields (Fig. 2.32). You can open the sidebar by swiping to the left or by pressing .

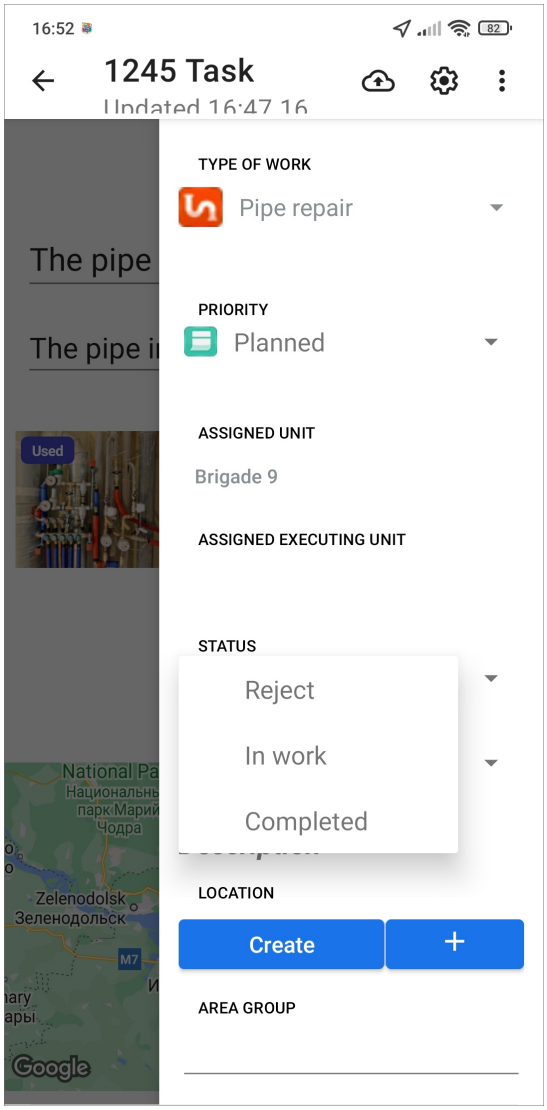


Fig. 2.32: Control panel in view and edit mode

Task parameters that are not available for editing by the user will be highlighted and marked with a lock icon. Clicking on the lock icon will allow you to see the reasons for the parameter blocking (Fig. 2.33).

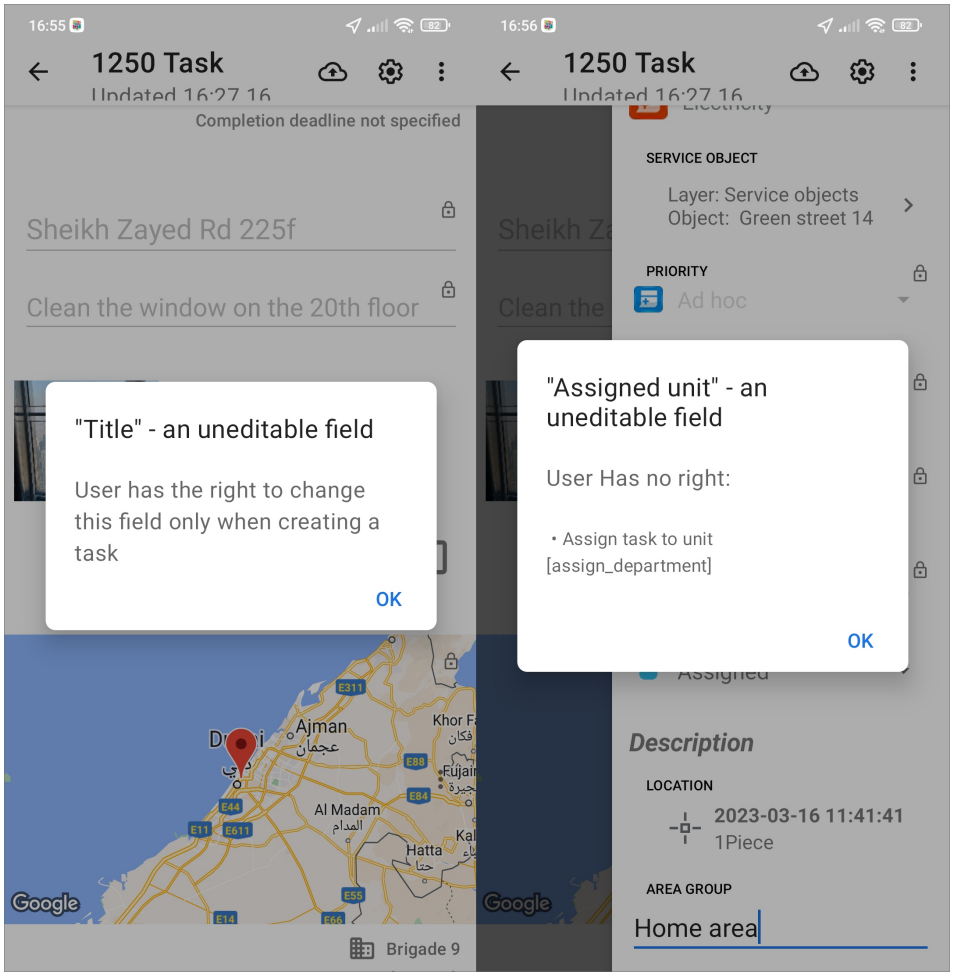


Fig. 2.33: Possible reasons for blocking field editing

You can view attached photos, videos and listen to audio recordings by clicking on the thumbnail image of the file in the task window. To add a new media file, press “Add media file” or the camera shortcut button. To save/delete and view detailed information about a file, press and hold the attached file until the menu panel appears (more information about working with media files can be found in section *Adding files and media* (page 33)).

Showing the location point on the task map indicates the geographic reference to the task location. If a task does not have a geographical reference, the task map window will display current location, and if you try to open the map in full-screen mode, the message “no point” will appear. Click on the map thumbnail to expand the map to full screen, view and edit the location.

The menu of the task map window enable to select the mode of viewing task location using mobile map services. These services will help to build a route to the desired point, calculate travel time, view street panoramas, etc.

After editing task information, the changes will be automatically saved on the user’s device. Upon returning to the tasks list, such tasks will be marked with the label “There are changes”. The application allows you to first edit all the necessary tasks separately and then send all the changes to the server at once. This may be necessary if there is no internet connection at the task location. Field staff edits the tasks, attaches media files, and when an internet connection is established, can send all of the edited tasks to the system. To do this, click “Window menu” in the task list view window and select “Submit Changes” (more information about

the “Window menu” can be found in section *Window menu* (page 24)).

Important: To send the changes made to the task to the server, press “Send” . Any changes not sent to the server will remain on the user’s device until they are deleted or sent to the server marked as “Changed”.

If the user does not have rights to edit the task, but the information should be transferred to the performer or administrator of the organization, the application provides adding comments in such cases. In order to create a new comment to a task you should press the add comment button at the bottom of the task window in the “Comments” block, enter text in the “Add comment” window and press “Save” (Fig. 2.33). After adding, the new comment will be displayed at the beginning of the list of comments. The comment is automatically sent to the server after it has been saved. You can also add your own comments to the updates made by other users.

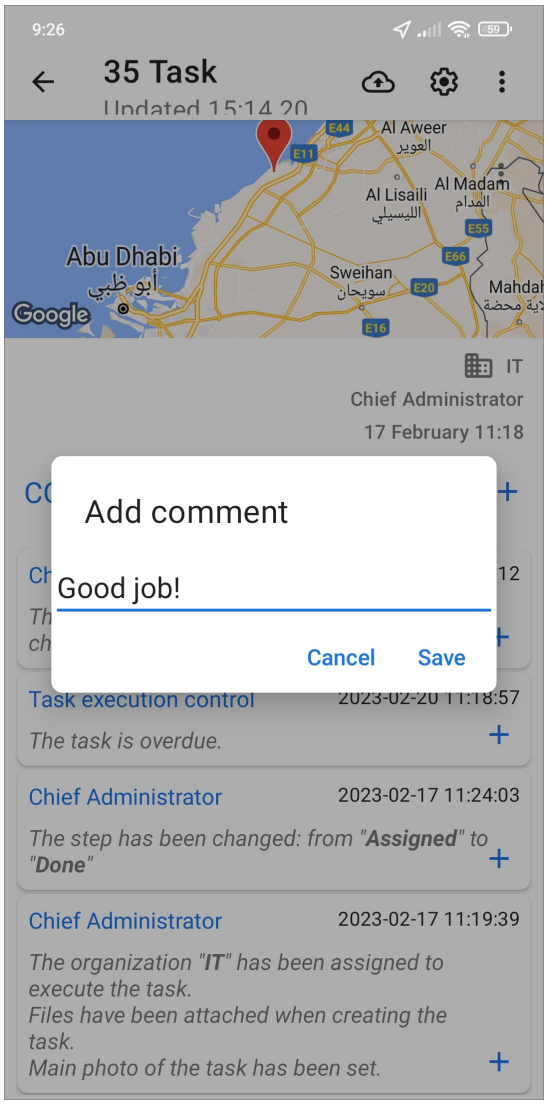


Fig. 2.34: Adding a comment to a task

2.5.2 Task Management

The "Window menu"  is used to manage the task and contains the following items:

- **"Show changes"** - view all changes made before they are sent to the server;
- **"Undo changes"** - return to the original information on the task and delete the changes made by the user;
- **"Report a bug"** - send information about application errors to the developers;
- **"Update data"** - update information on the task by synchronizing with the server. If other users have changed tasks, they will be displayed after the update. Updating the list of tasks is also done by swipe from top to bottom on the screen of the mobile device;
- **"Make a copy of the task"** - create a copy of the task with the possibility to select the data of the original task (for more details, see *Copying a task* (page 56));
- **"Sending problem photos"** - add photos that the system considered as fake by code. You can request the code from Technical Support;
- **"Show photo-links"** - detect errors in task photos. Shows the order in which photos were added and the number of the basis of which subsequent photos were taken when using the template photo mode (for more details, see *Using a template photos* (page 55));
- **"Show child tasks"** - display all copies of the task;
- **"Delete"** - delete the task from the system (more details in the section *Deleting a task* (page 57)).

For tasks with the "Draft" status there is an additional menu item - "Make copy of draft". To copy a draft of the task with the entered data, select "Make a draft copy" menu item in the task window. Use the counter to select the number of copies by moving the counter to the right or left (Fig. 2.35). The maximum number of copies is 100. All tasks with the "Draft" status are available in "My Tasks" list, more information about configuring task lists can be found in the *Setting up task lists* (page 19) section.

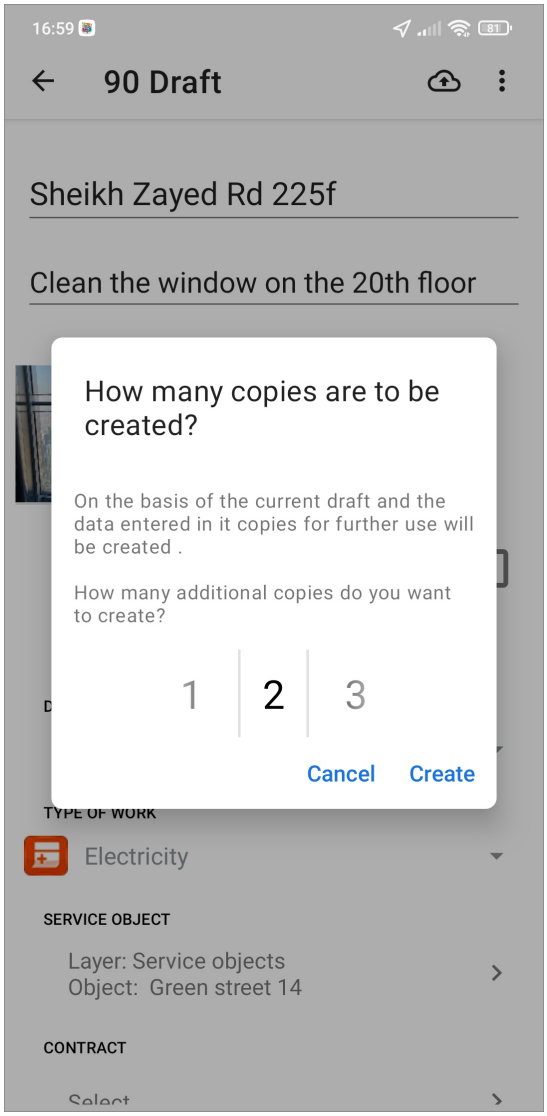


Fig. 2.35: Selecting the number of task copies

2.5.3 Loading tasks

In order to have access to all task information in offline mode (including photos and files), the application implements batch loading of tasks. To do this, the user needs to open the list of tasks for downloading (e.g. assigned to him), open the ⋮ window menu, select "Download tasks" before departure, when there is access to the Internet. A dialog box (Fig. 2.36) will appear, where user can cancel or confirm the download. The process of downloading tasks is displayed in the device notification bar. The user should wait for the download to complete. The waiting time depends on the number of tasks, the amount of information in them and speed of the Internet.

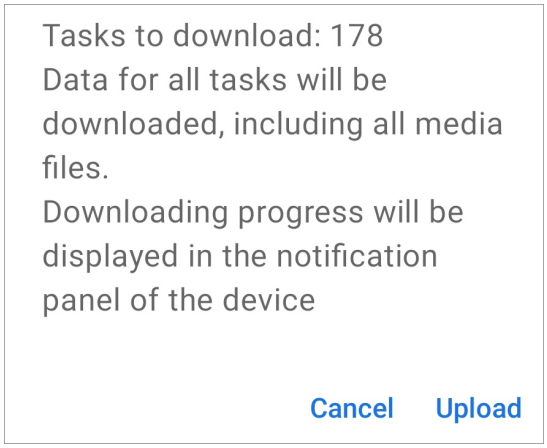


Fig. 2.36: Tasks load dialog

To check that all tasks have been loaded after the download is complete, the user have to open the window menu and select “Show downloaded”. All tasks loaded into the application cache will displayed, and an information message will appear at the top of the task list stating that the user is currently viewing downloaded tasks. All information on these tasks will be available in offline mode (Fig. 2.37).

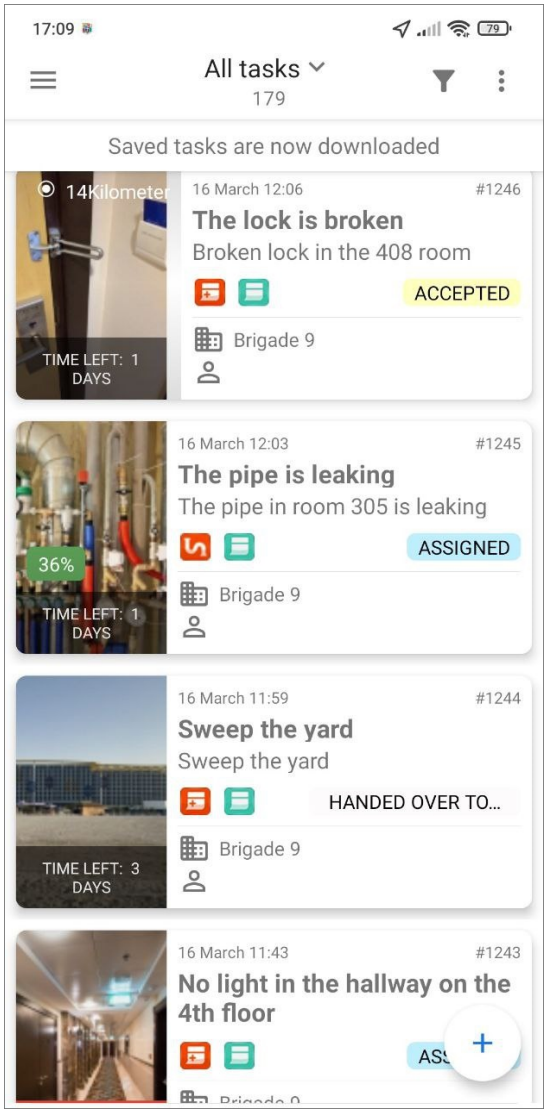


Fig. 2.37: Message about working with downloaded tasks

Attention: Changes to tasks made by other users will not be applied to downloaded tasks. Updating tasks requires reloading tasks after changes to the user's device.

The task window displays information on the time for which the downloaded task is up-to-date (task download time). To delete loaded tasks from memory, you need to clear the cache (Settings/Clear cache, for more information see *Application settings* (page 101)). Clearing the cache not only deletes the task information but also the loaded service objects.

2.5.4 Using a template photos

To take a photo in template photo mode open a photo from the list of attached media files (sample photo) and press in the lower right corner of the screen. Several display modes for the template photo will be offered for selection on the bottom panel (Fig. 2.38). User can choose the most comfortable option. It is possible to take photos in the template photo mode without a custom camera. To do this, disable the use of the built-in camera in the settings via the ActiveMap web system.

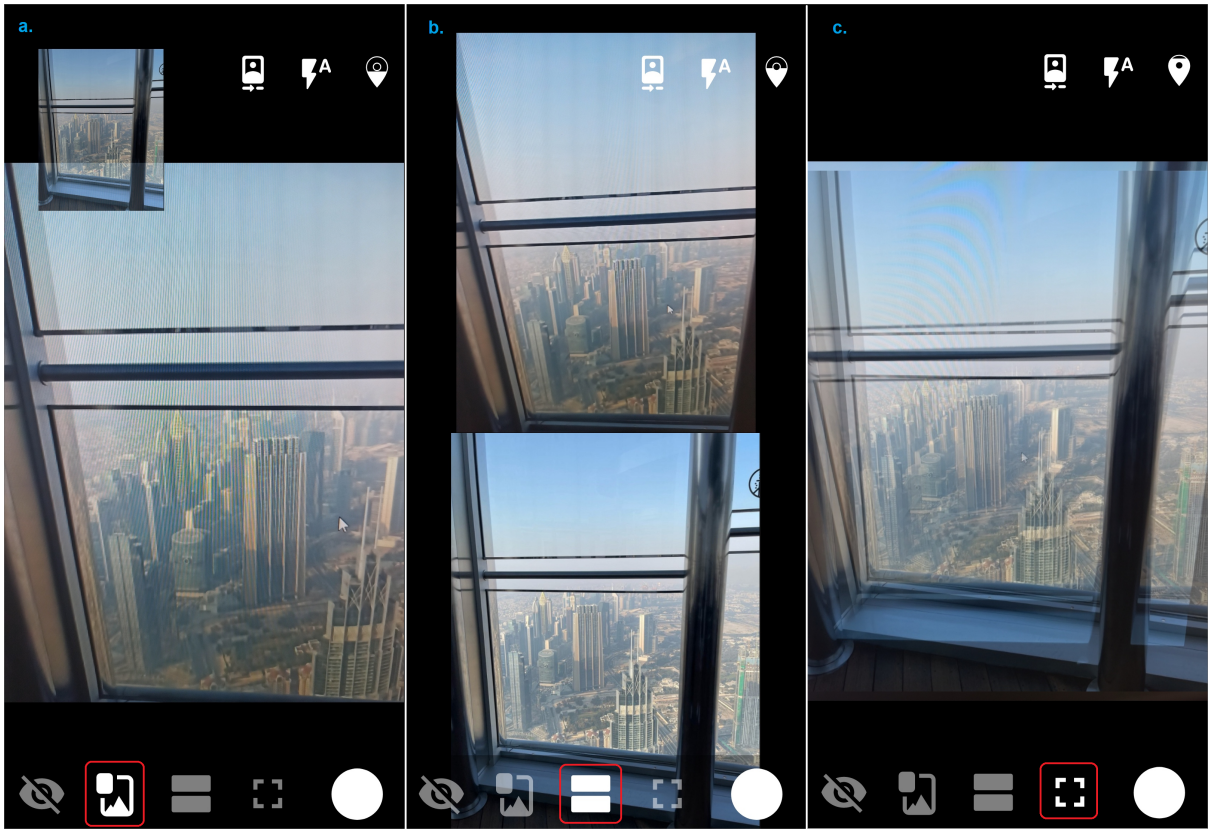


Fig. 2.38: Setting the sample photo display modes: a - sample photo in the form of a small thumbnail, b - sample photo at the top of the screen, c - template photo overlaid in full screen.

Photo links will be displayed as labels on the taken photos. To see them, go to the task window menu and select “Photo links” (Fig. 2.39). Numeric labels with arrows will appear on the photos. The arrow will point from the sample photo to the resulting photo. There can be several photo samples, and the resulting photo can also be a template photo for further work.

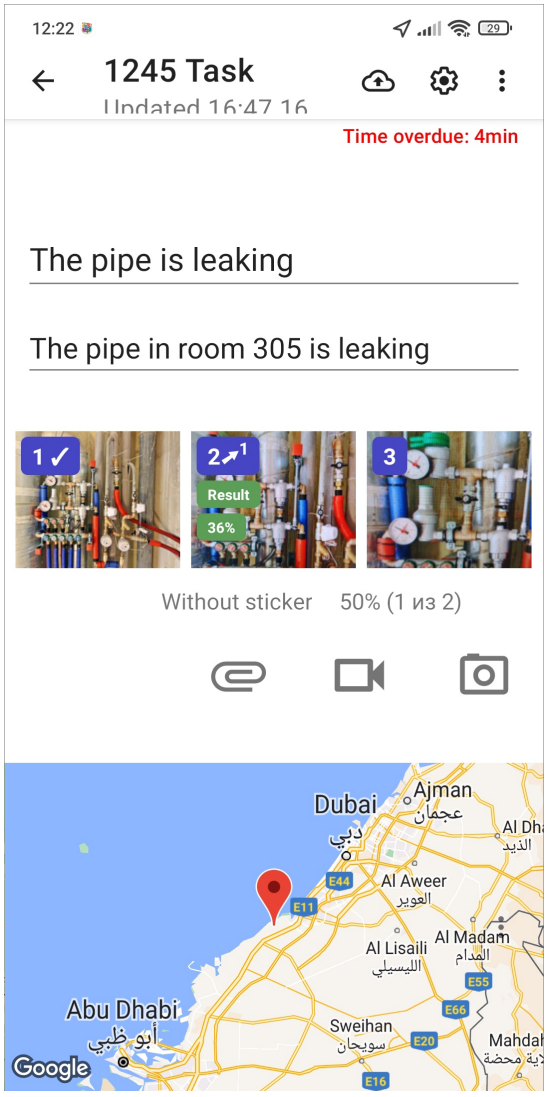


Fig. 2.39: Displaying “Photo links”

2.5.5 Copying a task

If you want to create new tasks of the same type and need to enter the same data, you can use task copying. To do so, create one original task, fill in the required data and add media files. Next, open the task, press “Window Menu” ⋮, select “Make a copy of the task” and information you want to copy to the new task:

- Title;
- Task text;
- Priority;
- Work type;
- Service object;
- Location;
- Custom fields (all custom fields will be copied if you select this option);

- Media files (all media files will be copied if you select this option).

After choosing the data, press “Select”. A task creation window will open with the information already filled in. You can make changes if necessary and then send the new task to the server or leave it in the draft list. To view all tasks created from a single task, open that task, press “Window menu”  and select “Show child tasks”. A list of all tasks that were created by copying the initial task will be displayed.

Note: If the copied task uses a work type that belongs to a specific organization, it will be copied to the new task even if you don’t select the work type. If a work type is common for all organizations and you do not check the box for a work type when copying, the default work type will be used in the child task.

Note: When copying a task under the role of Administrator or Cluster Administrator, it is necessary to specify the creating organization. If copying is done under a user with a specific organization, then the creating organization is automatically copied to the child task.

2.5.6 Deleting a task

“Delete” menu item in the “Task” window is not available to all users, its availability depends on the user’s role. Quick access to deletion involves holding the task card in the task list. Quick access applies only to registered tasks and will not work for tasks with a “Draft” status. The “Delete” button will appear. When deleting, confirmation of the action is required. All users can delete tasks with a “Draft” status from the task window menu. All tasks with a “Draft” status are available in “My tasks” list (see more about setting up task lists in the *Setting up task lists* (page 19) section). To delete a draft, open the task, press  and select “Delete”. When deleting, you are always asked to confirm the action.

If necessary, all tasks with a “Draft” status can be deleted at once. To do this, press  in the task list view window and select “Remove drafts” (:numref:fig1037), then confirm or cancel the deletion.

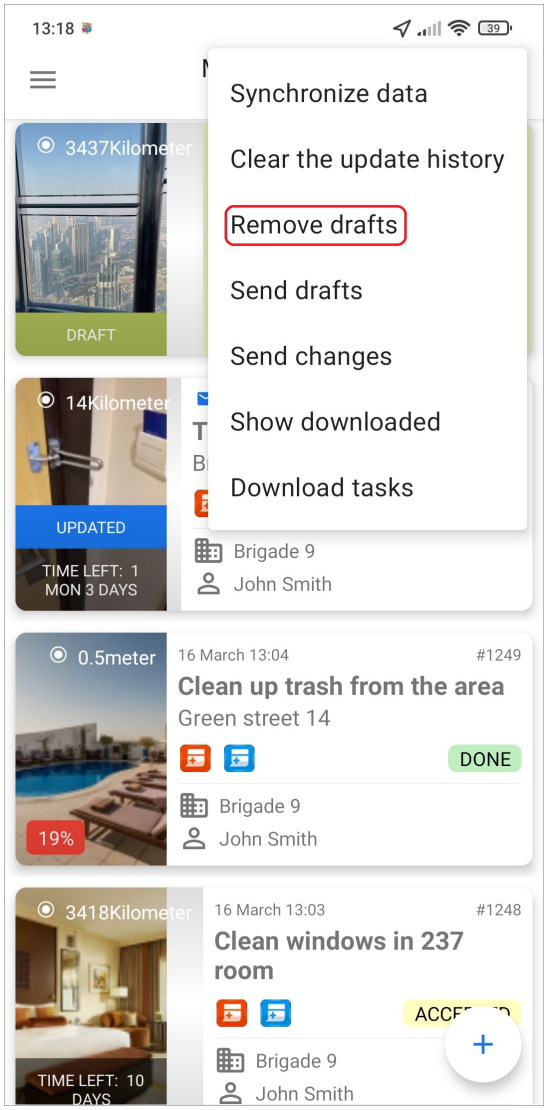


Fig. 2.40: Deleting tasks with “Draft” status

2.6 Updating refrence tables

The ActiveMap system has a number of reference data:

- Organizations and users;
- Types of work, groups of types of work, stages, priorities, custom fields;
- Settings, service objects, etc.

When refrence tables change, the system quickly delivers them to client applications. New values are entered into refrence tables using the ActiveMap Web web component. After adding, you need to update the data in the ActiveMap Mobile application.

Updating data in ActiveMap Mobile occurs during any access to the server (for example, when the user updates the task list, opens the task card). When the application starts, reference tables are automatically updated. If the data remains the same, you need to force it to update (for more details, see *Other settings* (page 106)). Data is updated within a minute

from the last data addition on the ActiveMap Web web component. If there were several actions at once to add new values to ActiveMap Web, then the application will be updated no earlier than one minute after the last change to ActiveMap Web.

If the user is creating or editing a task (layer object) in the ActiveMap Mobile application at the time the reference tables are being updated on ActiveMap Web, the reference tables will not be updated in the application because no requests are sent to the server during creation or editing. In this case, user should exit the task creation/editing mode (all changes will be saved), update the task list, return to the task draft (set "My Tasks" filter) or edited task, and continue filling with updated reference tables. The delivery time of reference tables updates to the application is about a minute.

2.7 Using additional data formats in application

2.7.1 Adding geometric objects on the map

The application allows adding point (multi-point), linear, and polygonal objects to the map. Objects can be created using the current location, by explicitly specifying coordinates on the map, or by recording a route track. Geometric objects can be attached to tasks that have a custom field of the "geometry" type (see more in the section *Working with custom fields* (page 31)). Geometric objects can be built during adding a task as well as independently of tasks.

To add an object in the additional attribute field of "Geometry" type, click on the "Create" button in the task creation window. In the opened window there is a map, window menu and buttons for adding objects of different geometry types (Fig. 2.41):

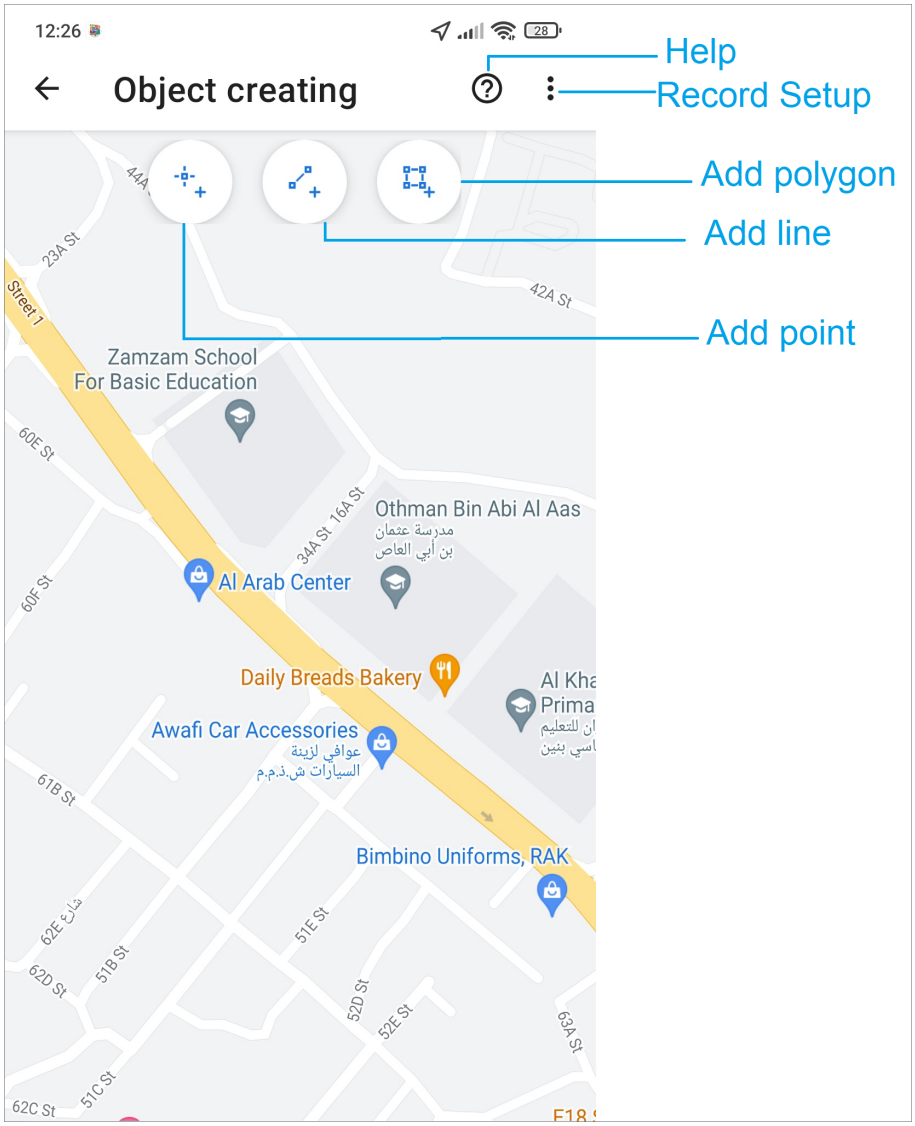


Fig. 2.41: Geometric object creation window

In the “Create object” window there is a section called “Record settings” for setting the minimum distance and time between adjacent points during route track recording. After selecting the geometry type and pressing the corresponding button (“Add Points”, “Add Line” or “Add Polygon”) you will switch to object adding mode.

To use the current location and record the track, it is necessary to connect the location sources of the user’s device and provide good conditions for receiving the navigation signal (Fig. 2.42). Being in buildings greatly reduces the accuracy of the navigation signal.

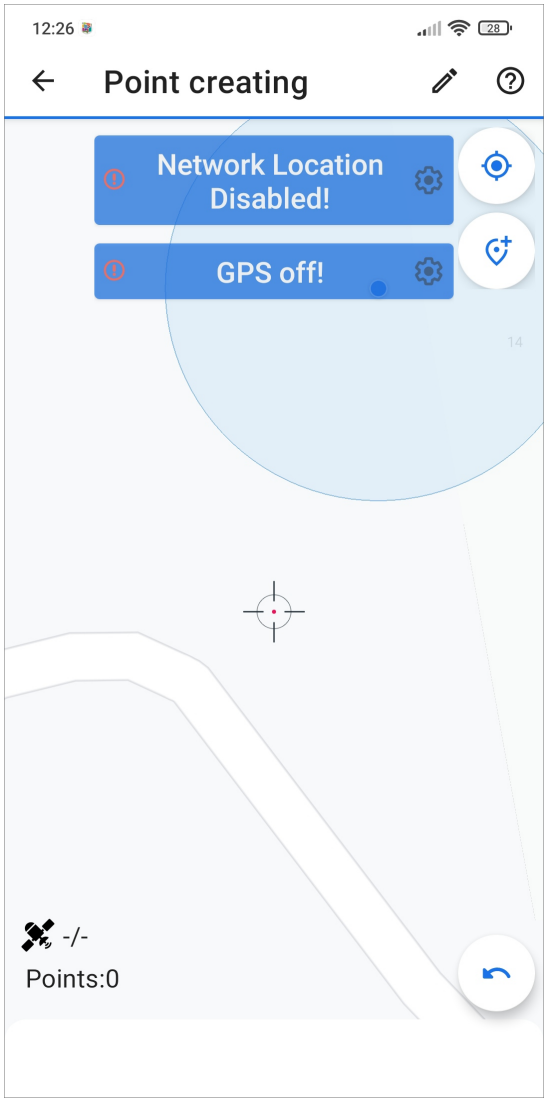


Fig. 2.42: Messages about location settings

The messages “Network positioning is off!”, “GPS is off!” notify the user that not all positioning settings have been configured. To configure location sources, go to the “Location” window, which is opened by tapping “Location settings”  . In the location settings window the user can set up using the GPS receiver, enable Wi-Fi and mobile data transmission. The more sources are included, the more accurately the user’s location will be determined. After enabling the required sources, the user returns to the location window (Fig. 2.43). This window gives an opportunity to determine the current location by built-in means of the device or enter coordinates manually (enter exact coordinate values or specify location on the map).

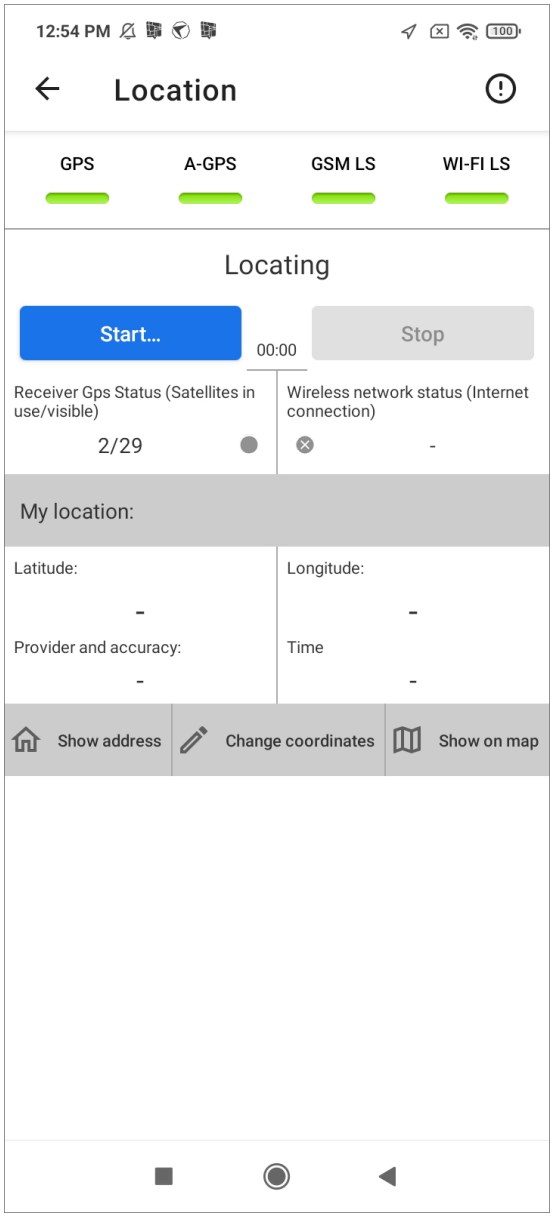


Fig. 2.43: Location window

In the upper part of the window there is a status bar for location sources (GPS, A-GPS, GSM LS, WI-FI LS). It contains status indicators for location sources and a button to update the panel data. The indicator panel allows to change the status of sources. Clicking on the selected indicator will open the extended panel containing a list of necessary system settings and permissions for source operation (Fig. 2.44). The controls in the expanded panel allow to change system settings and permissions by navigating to the appropriate settings windows.

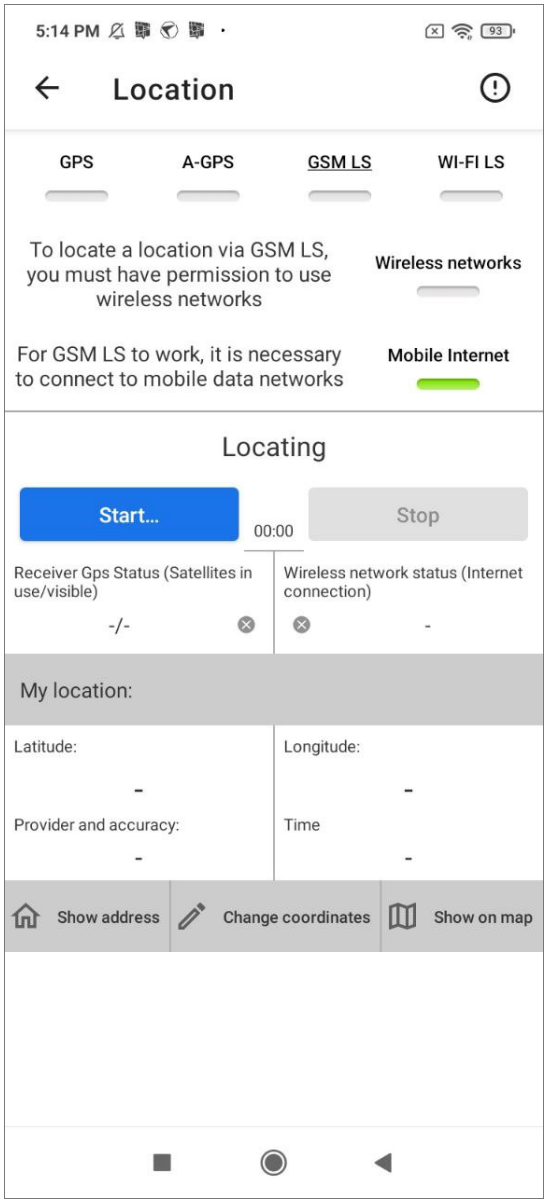


Fig. 2.44: Changing system settings for selected positioning source

To determine the location using the selected sources, click “Start.” The device’s location detection process will begin, a timer will start, the number of used and visible GPS satellites will be displayed in the “GPS receiver status” field (Fig. 2.45). When the position has been determined, an appropriate message will be displayed, and the process of determining (refining) the position will continue. “My Location” field will display the coordinates found (in the WGS 84 ellipsoid coordinate system - Latitude/Longitude - EPSG:4326) and the accuracy of the found coordinates in metres. To stop the positioning process and refine the position, press “Stop”. Press “Use” to use the found coordinates with the obtained accuracy.

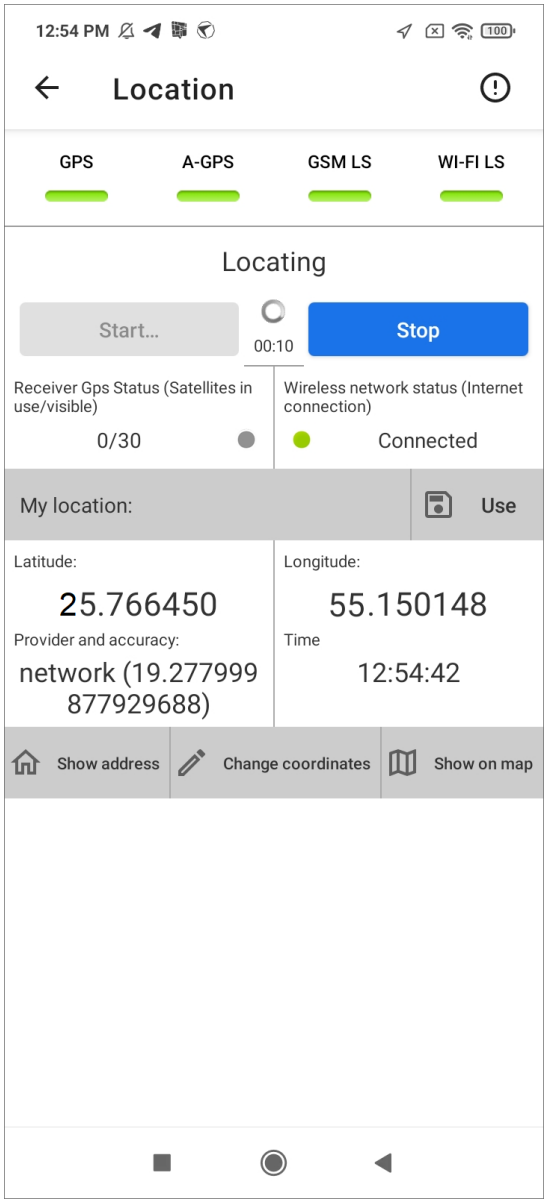


Fig. 2.45: Determining the location using selected sources

"Show address" button displays the address according to the found coordinates. "Show on map" button allows displaying and, if necessary, editing the found coordinates on the map. The attached location is marked with a red label. The user can move the label by clicking on it and dragging it to the desired location, while the precise changed coordinates will be displayed in the bottom of the window. The "Edit coordinates" button  in the "Location" window is designed for manual input/editing of coordinates. This is done similarly to changing task coordinates (section *Geolocation of tasks* (page 43)).

To edit an object, click on the "geometry" task field. The "View Object" window will open, where the user can edit the object positions (just like when adding objects). To remove an object from the list, just click "Delete"  in the object view window. When deleting, confirmation of the action is always requested.

2.7.2 Adding point objects

A point (multi-point) object can be added using the current location or by explicitly specifying coordinates on the map. After clicking “Add points”, the “Create a point” window will open. All buttons of this window are shown on Fig. 2.46. Menu of this window contains a “Help” button for calling up up help on adding points to the map. At the bottom of the window there is a “Location settings” button for switching to the current location source settings window (these settings have been described in detail in *Adding geometric objects on the map* (page 59)).

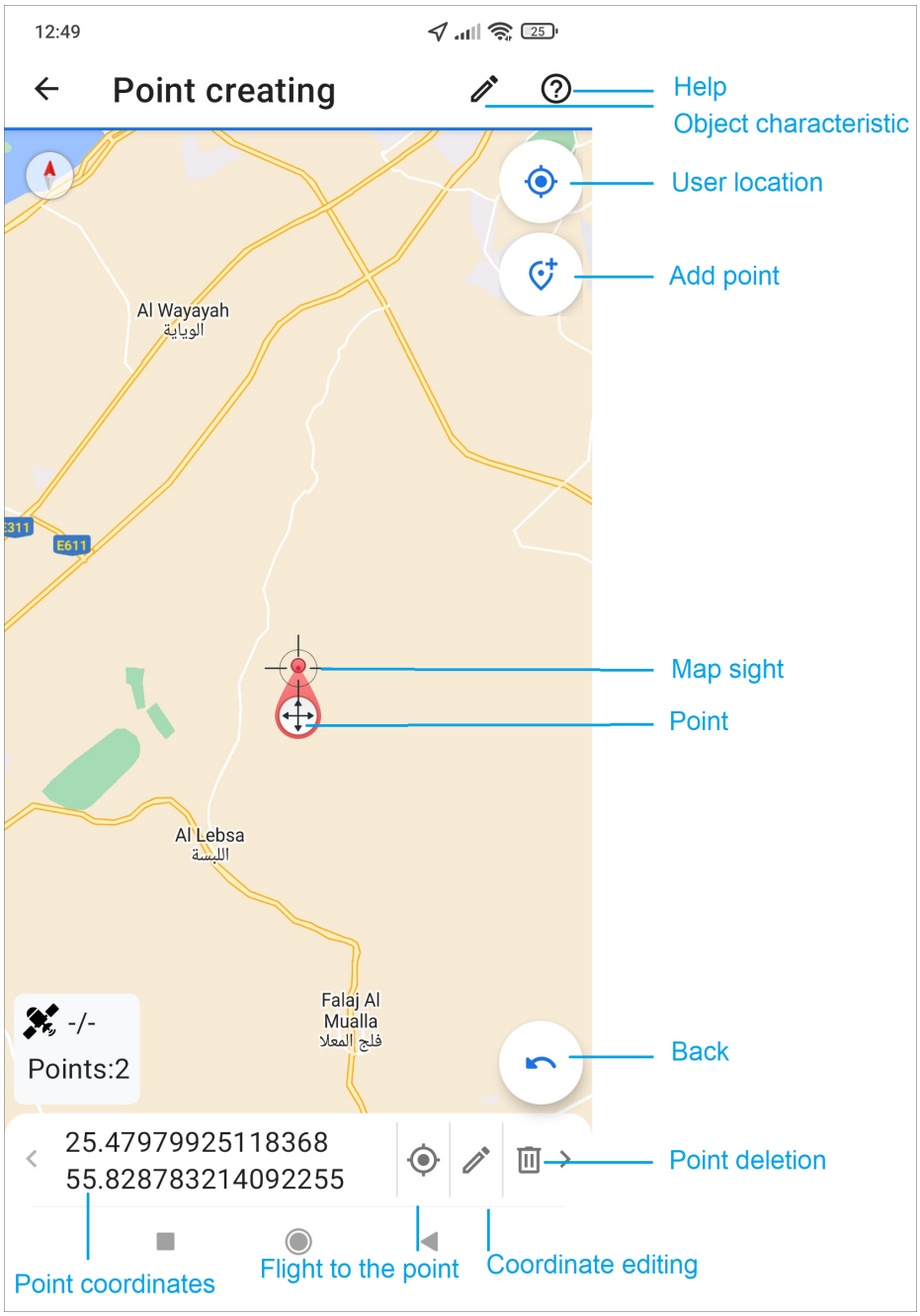


Fig. 2.46: Window for adding point objects

To add points on the map:

- place the map cursor at the desired position on the map and click “Add point”,
- mark the point with a long press.

During the process of adding points, use the “Back” button to delete the last point added. The number of points and their exact coordinates is displayed at the bottom of the window. Added points ara available for editing. Point position can be changed in two ways:

- select a point on the map by short pressing on it (the map cursor will be placed on the point),
- scroll through the list of points at the bottom of the window (from left to right or right to left), during the scrolling process the map cursor will be placed in the current point.

To edit the coordinates of the selected point, you can move it. To do this, you need to make a long press on the point and move it to another location, or you can manually click “Edit” and correct the coordinates of the point in the window that opens. To remove a point, press the “Delete” button. After adding and editing points, you can add name and description of the point by clicking “Edit”  at the top of the point creation window. You should fill in the information in the opened window. The point is saved automatically. When you leave the point creation window, the window “Object properties” appears. The same actions can be done to create a multipoint object (consisting of several points). In the point creation window the desired number of points is added instead of just one point.

2.7.3 Adding linear and polygonal objects

Linear and polygonal objects can be constructed using the current location, by explicitly specifying coordinates on the map or by recording a route track. To add an object, click “Add Line” or “Add Polygon”. To record a route track, press “REC”  (Fig. 2.47). During the route track recording you can use the “Pause”  , “Stop”  buttons to control the recording process. During the recording process, the following parameters are displayed in the map window: number of visible GPS satellites from the number of available GPS satellites, track recording time, number of found points.

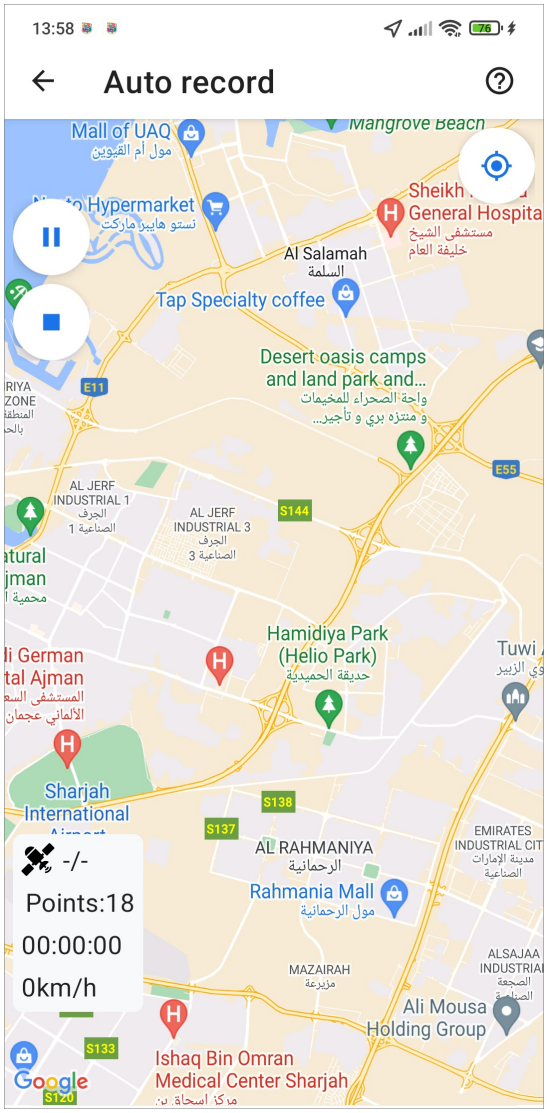


Fig. 2.47: Creating objects using route tracking

To add an object manually, mark the line vertices by long pressing on the map or place the map cursor in the desired location on the map and click “Add Point”. The fixed (specified) points will be connected by a line, and the line will be closed into a polygon in case of creating a polygonal object. During the process of adding points, the user can use “Back” button, which will delete the last added point. The number of points and their exact coordinates will be displayed at the bottom of the window. Added vertices of the object will be available for editing. The position of the point can be changed in two ways:

- select a vertex on the map by short pressing on it (the map cursor will be placed on the point),
- scroll through the list of vertices at the bottom of the window from left to right or from right to left (map cursor will be placed at the current vertex during the scrolling process).

Then to edit coordinates of the selected vertex you can move it. To do this you need to make a long press on the point and move it to another place or you can press “Edit” and correct the coordinates of the vertex in the opened window. To remove a vertex, press the “Delete” button. You can add the name and description of the object after adding and editing it. Press

the “Edit” button  in the upper part of the object creation window to do it. A new window called “Object properties” will open. Objects are automatically saved. If you leave the object creation window, the “Object View” window appears. Object can be saved without filling characteristics, then the date and time of creation is written in the object name.

2.8 Service objects

The “Service objects” section is located on the navigation side menu. The “Service objects” window is intended for viewing the objects of interest of the organization, creating tasks to these objects and viewing all existing tasks by objects. Objects of interest are represented as layers (Fig. 2.48). By default, the objects of the “Service objects” layer are displayed. When you click on the “Service Objects” line, a search box appears where you can select another layer.

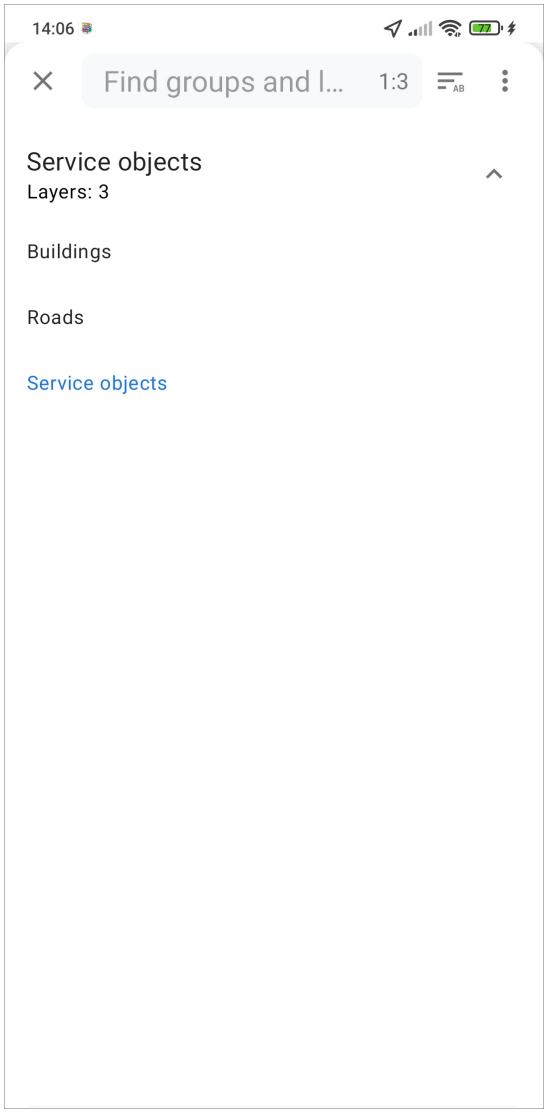


Fig. 2.48: Selecting a layer from the “Service objects” list

Pressing  opens menu where you can select the following actions for the layers:

- Update data,
- Disable all,
- Expand groups,
- Collapse groups.

After selecting a layer, a window with a list of layer objects will open. To find an object quickly use the sort and filter buttons at the top of the window (Fig. 2.49).

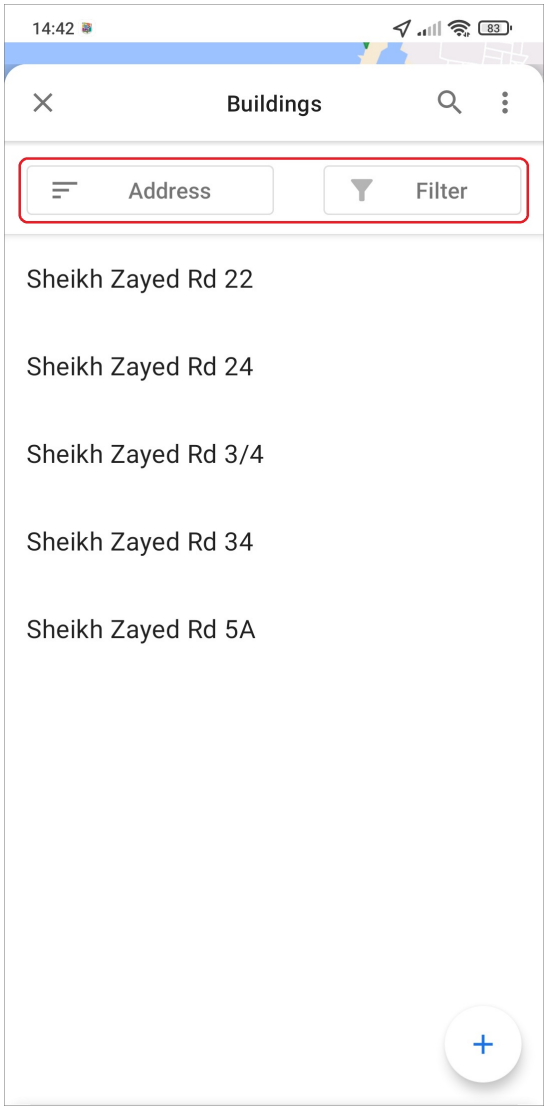


Fig. 2.49: Sorting and filtering service objects

The sort button shows the attribute by which objects are sorted by default (object title). The default sort direction is ascending. In the sorting window you can also search by attributes (Fig. 2.50).

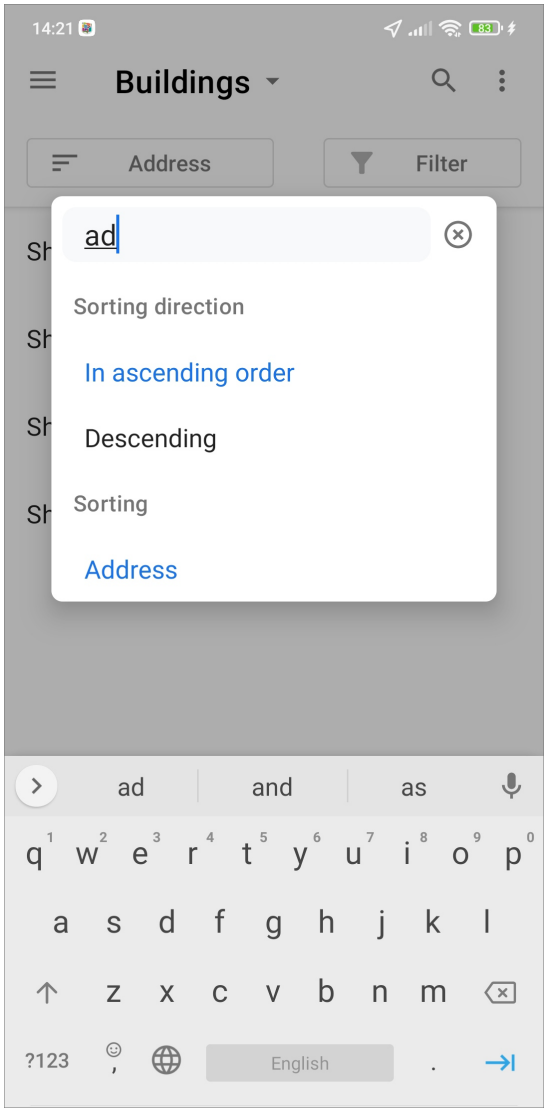


Fig. 2.50: Service objects sorting window

In the filter window user can set the necessary conditions for displaying the list of objects (Fig. 2.51). It is possible to use logical AND/OR operators depending on the user's request.

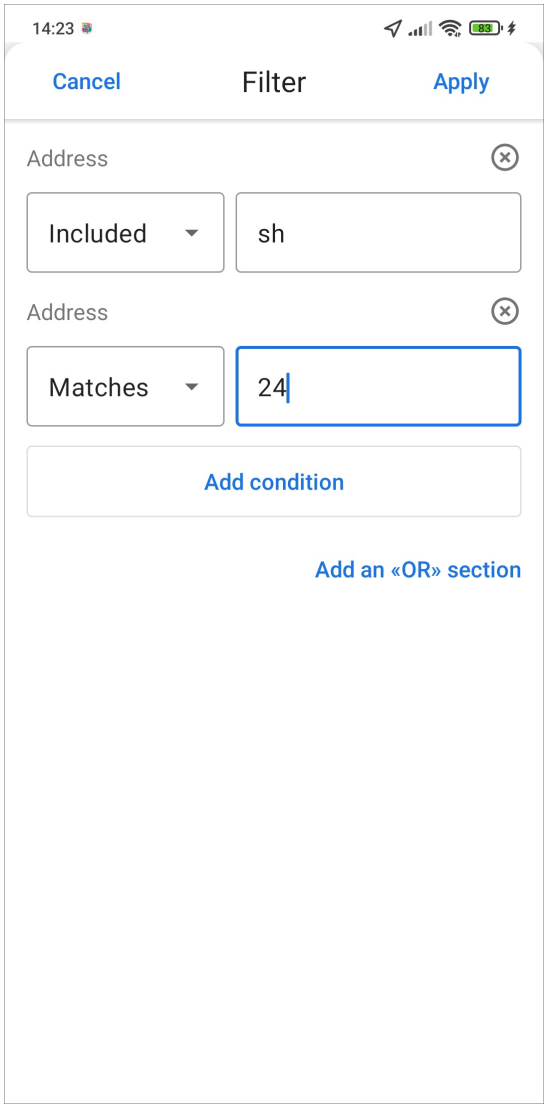


Fig. 2.51: Service objects filtering window

Objects can be searched by titles, including offline search for downloaded objects. The title is formed by concatenating (combining) fields with corresponding attributes in the ActiveMap Web web system. You can search an object by name or using a QR code. New objects can be added to layers by clicking , filling in attributes and coordinates, adding files and links if necessary. The "Current Location" field is automatically filled if geolocation is enabled on the phone and the application is given permission to determine the geolocation. If geolocation is inactive, this field remains blank. The "Date" and "Date+Time" fields support manual data entry and date selection from the built-in calendar, time selection from the built-in clock. After filling in all the data for the object, all changes must be sent to the server by clicking . The object name must be filled in. If the title is not filled in, id will be specified as the name of the object.

To make a change, first select a layer, then use text search or search using a QR code to find the object of interest and click on it. In the opened "Service Object" window, press , make changes and send them to the server by pressing . If you exit the service object edit window before the changes are sent to the server, the application will specify if the changes

should be sent or deleted (Fig. 2.52). The time for which the object is up-to-date is indicated under the title in the “Service Object” window. This is important for working with loaded objects. If the user forgets to clear the cache, the up-to-date time will be different from the current time, the time of uploading to the cache will be indicated there.

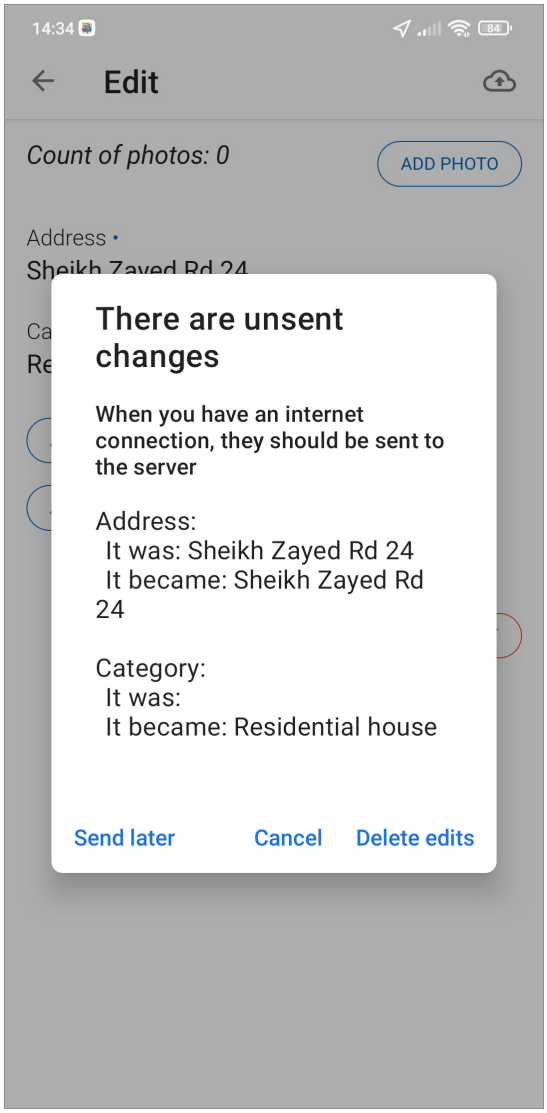


Fig. 2.52: Submit or discard changes

When you select “Send later”, the application saves the new object in the cache and assigns it the “Draft” status. You can create a draft service object online and offline. The created draft will appear in the “Drafts” subsection of the Service Objects list interface (Fig. 2.53).

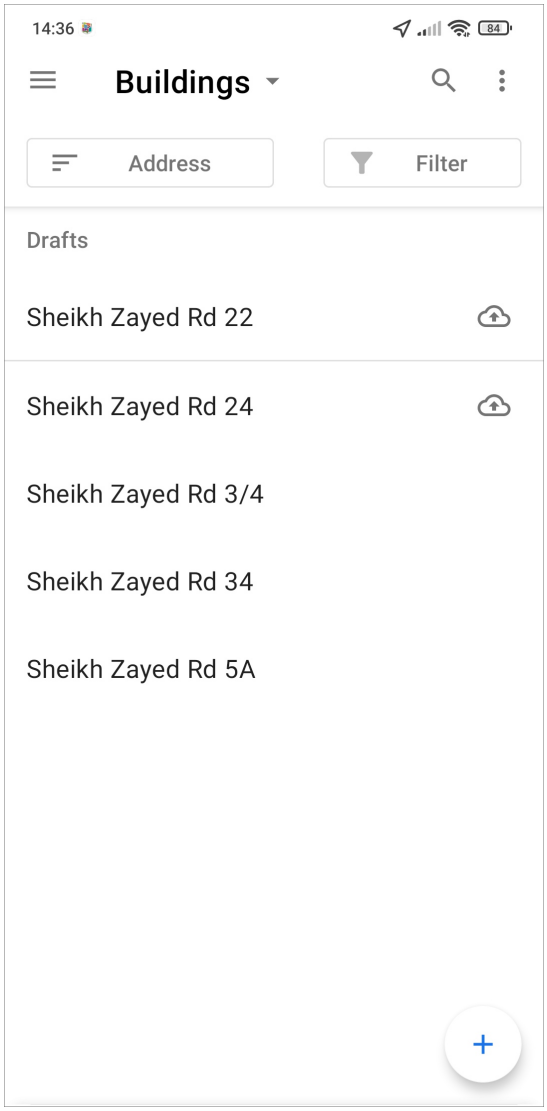


Fig. 2.53: “Service object drafts” subsection.

Next to the draft there is a button for sending a draft to the server from the object list interface. To send all new objects or changes to objects at once, press in the upper right corner and select the desired item. The window menu contains the following items (Fig. 2.54):

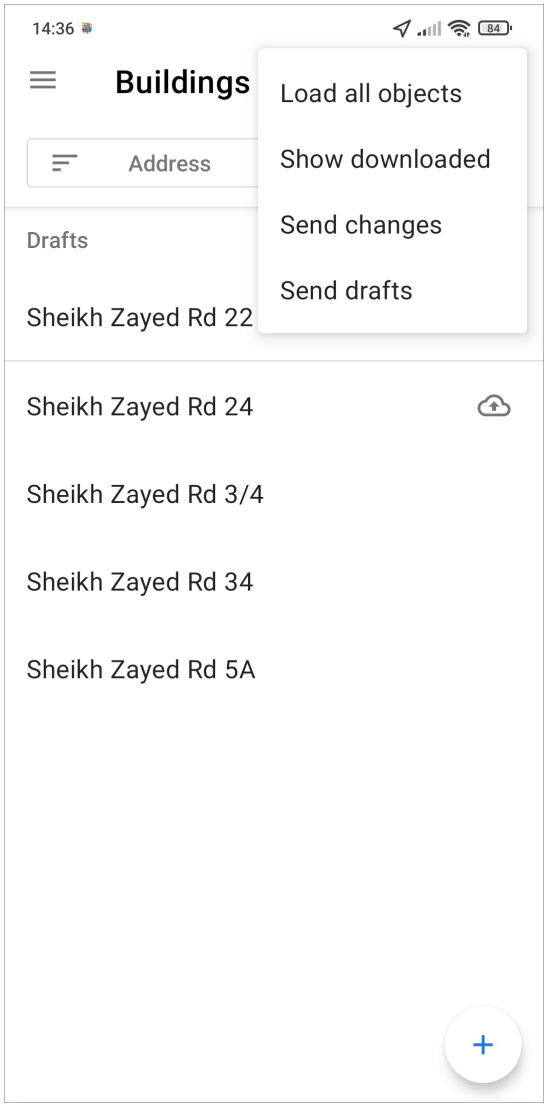


Fig. 2.54: Service objects list interface window menu

- Load all objects - load all layer objects in the cache to work with them offline.
- Show downloaded - preview of the list of objects that will be displayed in offline mode.
- Send changes - send changes of objects to the server.
- Send drafts - send all new objects to the server.

To work with the service objects in offline mode, load all the layer objects into the application cache. Open the list of the layer objects, click ⋮ and select the “Load all objects” item. You can also do this from the “Create task” window when you select a service object. The information message “Downloading started” appears at the bottom of the screen. After that the message “Saved objects are currently loaded” appears at the top of the list of objects.

If service objects are loaded and there is an Internet connection, objects will be searched only by the data in the internal storage until the user updates the loaded data.

To remove loaded service objects from memory, you need to clear the cache (Settings/Clear cache, see *Application settings* (page 101) for details). When clearing the cache, information about service objects and loaded tasks will be deleted.

Attention: Regardless of the presence of an Internet connection, downloaded service objects remain in the state at the time of download until the user updates the data. To update already loaded service objects, it is necessary to update the data and download the objects again before starting work with them.

You can also delete the object in the window for editing the service object. Click "Delete object" to do this. To see the object on the map, press  . The map window with the object's point will open.

In order to see all tasks related to the selected object, click on "Related tasks" (Fig. 2.55). List of all tasks attached to the object will open, displaying the total number of tasks attached to the object. To create a new task with a link to the selected object, press "Create task" in the "Service object" window (how to create a new task is described in the *Creating new tasks* (page 28) section). Layer name and name of the object are displayed in the task. The object name format is configured in the ActiveMap Web web system.

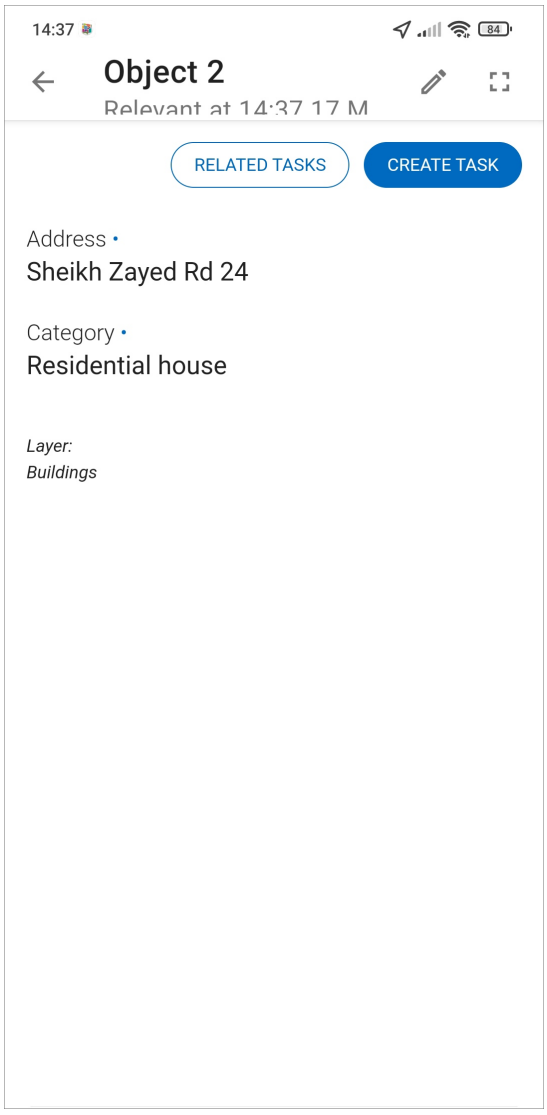


Fig. 2.55: "Service object" window

Hint: Similarly, you can create a task for any object in any available layer in the "Map" section.

2.9 Working with the map

2.9.1 Managing Layers

In addition to georeferencing of tasks, the application offers the following features for working with geospatial data:

- online visualization of geo-referenced data (location of employees, tasks by stages of work, service objects, information layers);
- search in the list of information layer objects;
- obtaining cartographic information (list of layers, objects, their attribute data and attached media files at a selected point on the map);
- viewing tracks of user movement for the selected day;
- creation of tasks from a layer of service objects;
- creation and assignment of tasks from the user's monitoring window.

These features are available in the "Map" section on the side navigation menu. The "Map" window displays an electronic map of the world. The scale of the map can be changed with pinch and spread motions. To navigate, the user can move the map to the desired area.

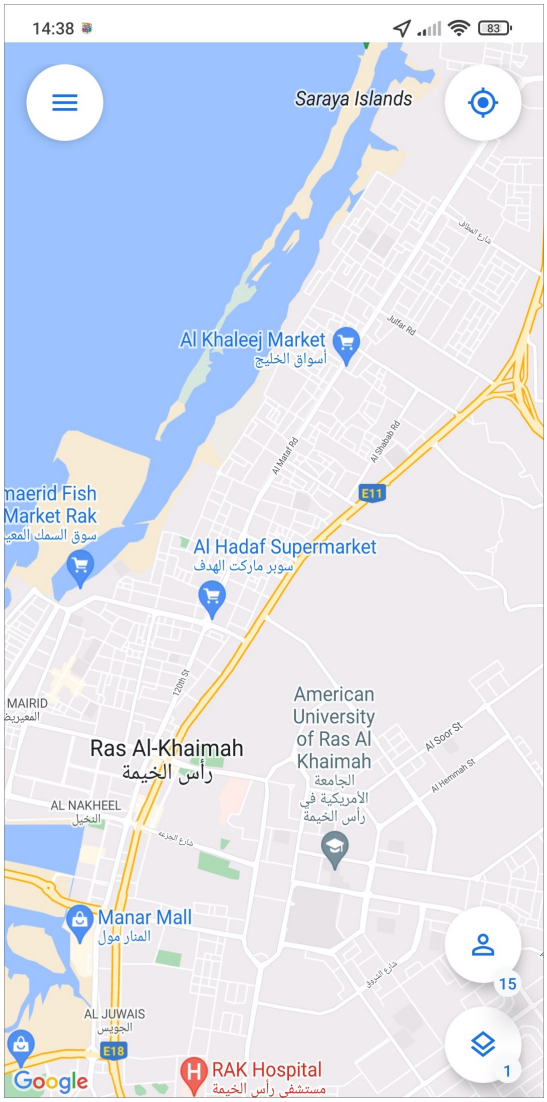


Fig. 2.56: Map window

The “Map” window displays (Fig. 2.56):

- enabled layers on the map, including tasks,
- location of users - users are displayed as icons with the abbreviation of the last name and first name,
- status of the last user geoposition monitoring data transfer,
- “My Location” button,
- “User Management” button with the number of connected users,
- “Manage Layers” button with the number of enabled layers,
- button opening the navigation sidebar .

The Layers control panel is designed to work with layers and view georeferenced tasks on the map. The panel opens by pressing the Layer control button at the bottom of the window. The Layer control panel displays groups of layers available to the user, including the “Tasks” group (Fig. 2.57).

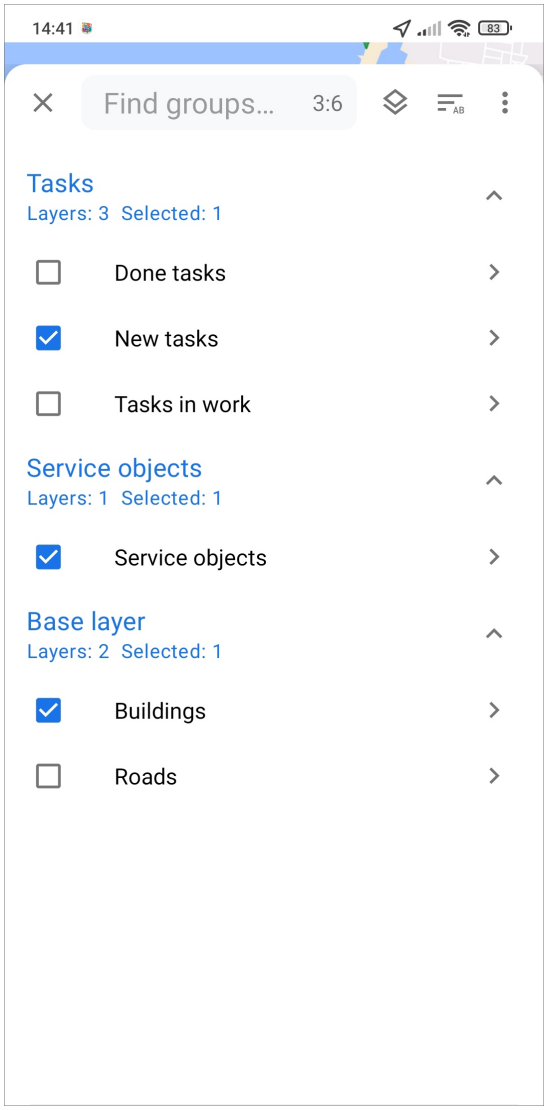


Fig. 2.57: Layer control panel

To display layers on the map, check the visibility control located on the left of the layer name. Objects of the selected layers will be displayed on the map. To make it easier, there is a search function in the Layer Management window to sort the layers in alphabetical order or by the sequence number. Pressing ⋮ in the upper right corner opens the window menu with the following items:

- Refresh data - updating the data of layers and groups of layers,
- Turn off all - disabling the visibility of all enabled layers on the map,
- Expand groups - expanding all available layers in groups,
- Collapse groups - hiding layer names (only group of layers will be visible).

If you click on the "Tasks" group, a list of layers will be displayed according to the stages of task completion. If you put a tick in the layer visibility control field, the tasks will be displayed on the map with geographical reference to the area. The number of groups and layers is displayed to the right of the search field. If the search field is empty, the total number of groups and layers will be displayed on the right. When you enter values in the search field, the number of groups and layers satisfying the search conditions is displayed on the right.

Clicking on the selected layer opens a list of layer objects. To move to the entire layer on the map, press ⋮ in the upper right corner of the object list window and select “Fly to Layer”. Other items are also available in the menu:

- Load all objects - load all objects of the layer into the cache for working with them offline,
- Show downloaded - preview of the list of objects that will be displayed offline,
- Send changes - send object changes to the server,
- Send drafts - send all new objects to the server.

To find the required object in the list, the application implements a search for objects by title (Fig. 2.58). The title is configured in the ActiveMap Web web system.

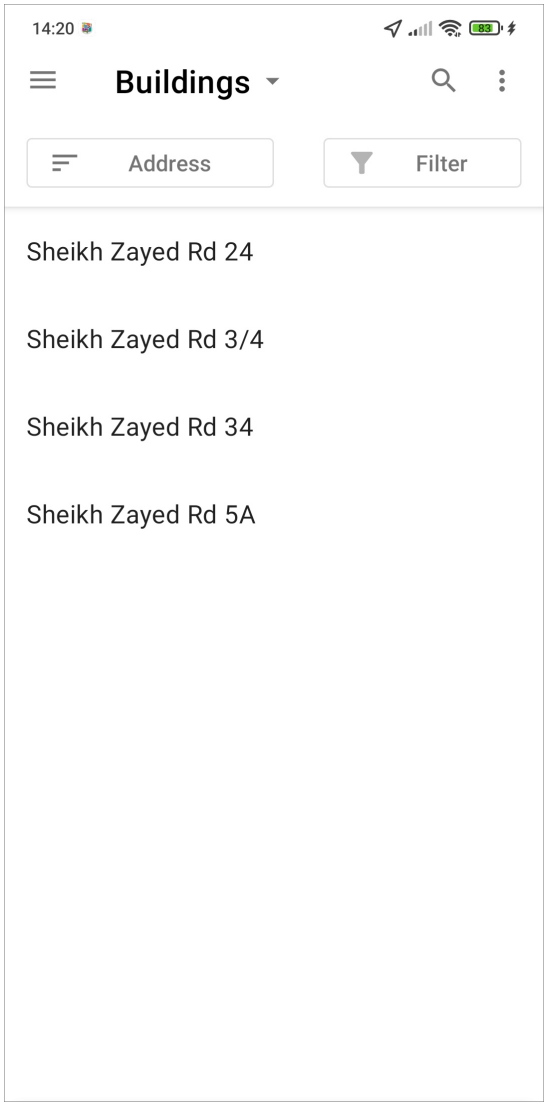


Fig. 2.58: Search in the object list

To get attributive information, you have to find the required object in the list of layer objects and select it. The “View object” window will open, containing attributive information on the selected object (Fig. 2.59). Click “View attached files” to view media files attached to

the object. To navigate to an object on the map, press . To get attribute information (list of layers, objects, their attribute data and media files) at the selected point on the map, mark a point on the map by touching the screen. The information window "View Objects" with the list of layers and objects that are located in the marked point of the map will be displayed. This window also contains information about the number of layer objects at the selected point. To get detailed attributive information about an object, select the object in the list by touching the screen. The "View object" window will open. The application also allows adding, editing, and deleting layer objects if the user is granted the proper access rights (for more details see *Service objects* (page 68)). To edit or delete an object, press and perform the necessary actions on the object in the opened window.

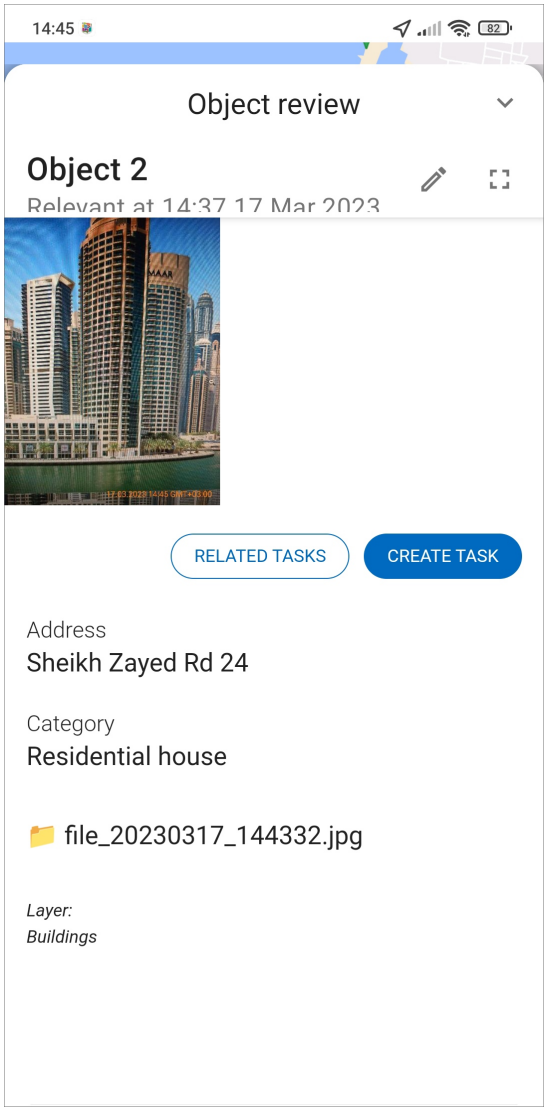


Fig. 2.59: "View object" window

2.9.2 User management

Viewing users and their movements

The “Map” section provides the ability to track user locations. This function is available to administrative roles (inspectors, administrators). Users with other roles can only track their own movements. This feature allows monitoring the movement of performers in real-time, viewing their movement history and obtaining the following information about the user: movement speed, battery level, last data transfer time, distance, number of assigned tasks in work, membership in organizations, role in the system, account information, network connection status.

To get information about users, click “Manage users”  in the “Map” window. The button also displays the total number of users authorized on the server. The opened window will display a list of users formed according to activity data (Fig. 2.60). By default, users are sorted by the time of the last data transfer.

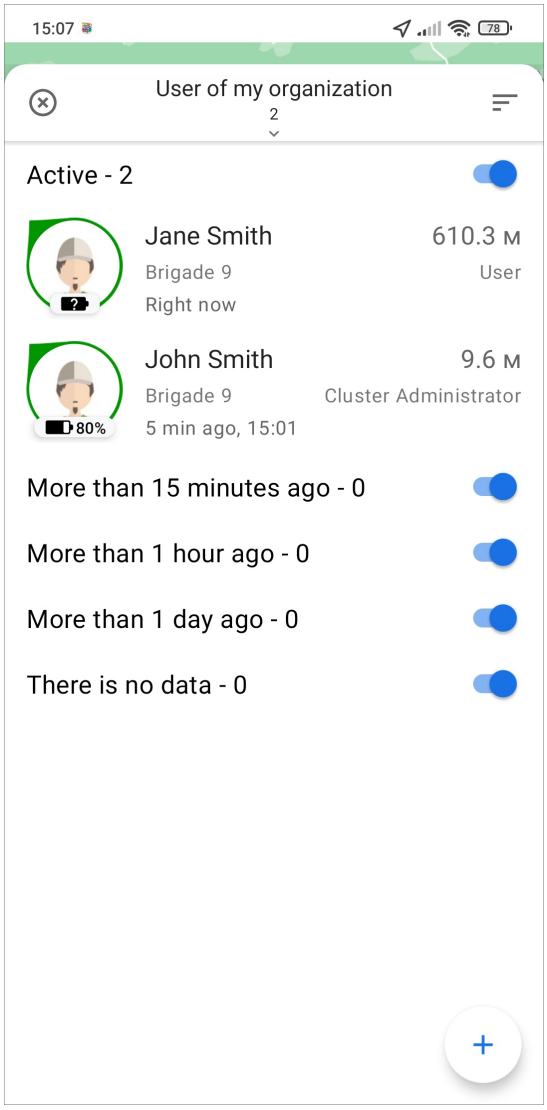
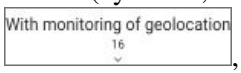


Fig. 2.60: “Users” window

User icons on the map change color depending on when the coordinates data was last trans-

mitted to the server. The intervals for the activity of the latest data transmission can be changed in the settings of the “Users” system layer in the ActiveMap Web web system. By default, the following activity intervals of the last transmitted coordinates by users are set:

- green color - coordinates sent to the server less than 15 minutes ago,
- orange color - coordinates sent to the server less than 60 minutes ago,
- red color - coordinates sent to the server less than 24 hours ago,
- gray color - coordinates are missing for more than 24 hours.

Using the switches located to the right of the categories, users can be filtered according to their activity. User display order can be filtered with quick filters in the top right corner (by name, time, distance from the user). Also you can use the advanced filtering 

, which displays a list of possible characteristics that can be filtered (Fig. 2.61). By default, the filter displays all users whose geolocation tracking is enabled.

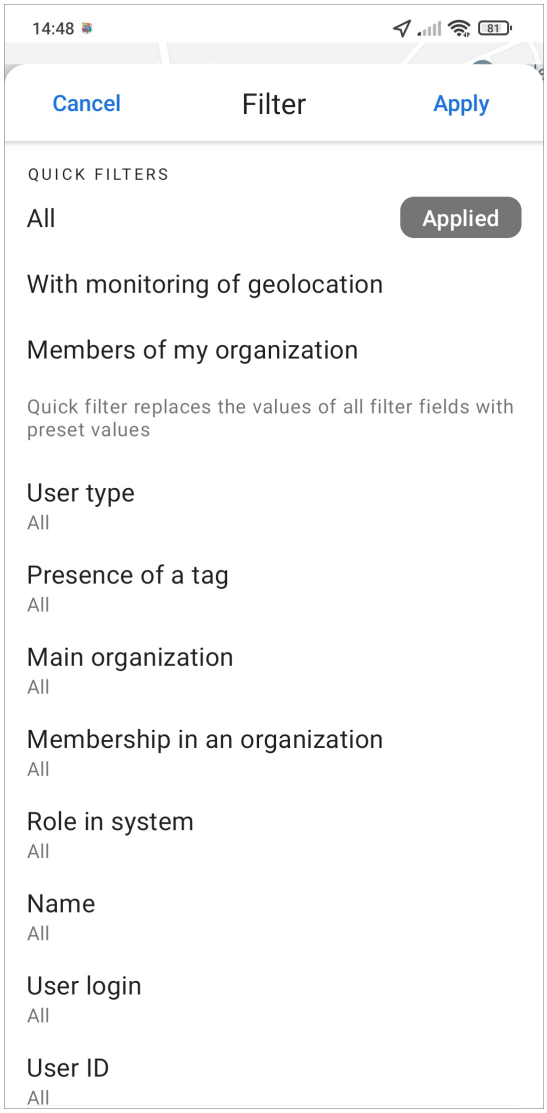


Fig. 2.61: Advanced user filter window

To get information about the user, click on the user card in the list or on the map. The system

will display the user's position on the map, as well as information about movement speed, battery level, time of last activity, distance to the user (if set correctly). In addition, you can see the user's track. To do this, press , select the day and time interval of interest. The track will be displayed, for which it is possible to move the user's location marker and view information at each point of movement. The track will be displayed on the map, but you can view the track points as a list (Fig. 2.62). To do this, press . To update the user's location data, press .

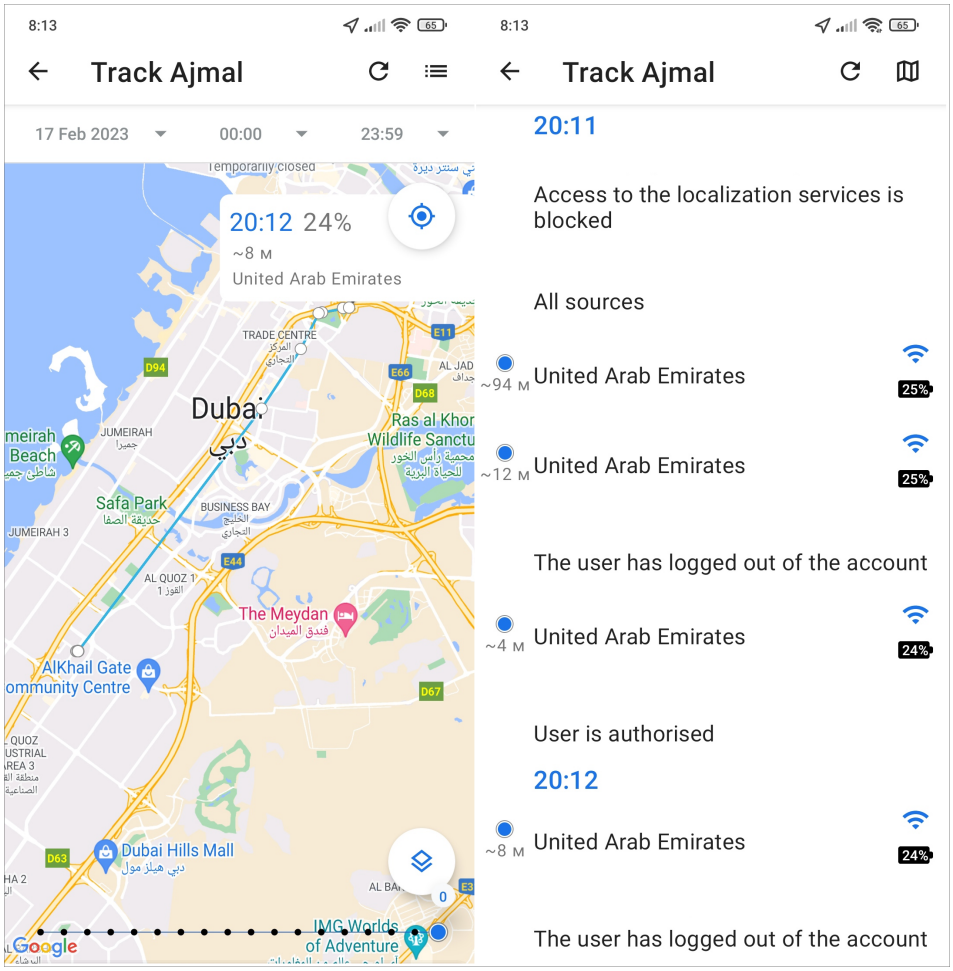


Fig. 2.62: Viewing the user's track

Creating Users

To create new users, go to the navigation menu section *Map* → *Manage Users*  and click on the button  to create a new user (Fig. 2.63). This functionality is not available to all user roles.

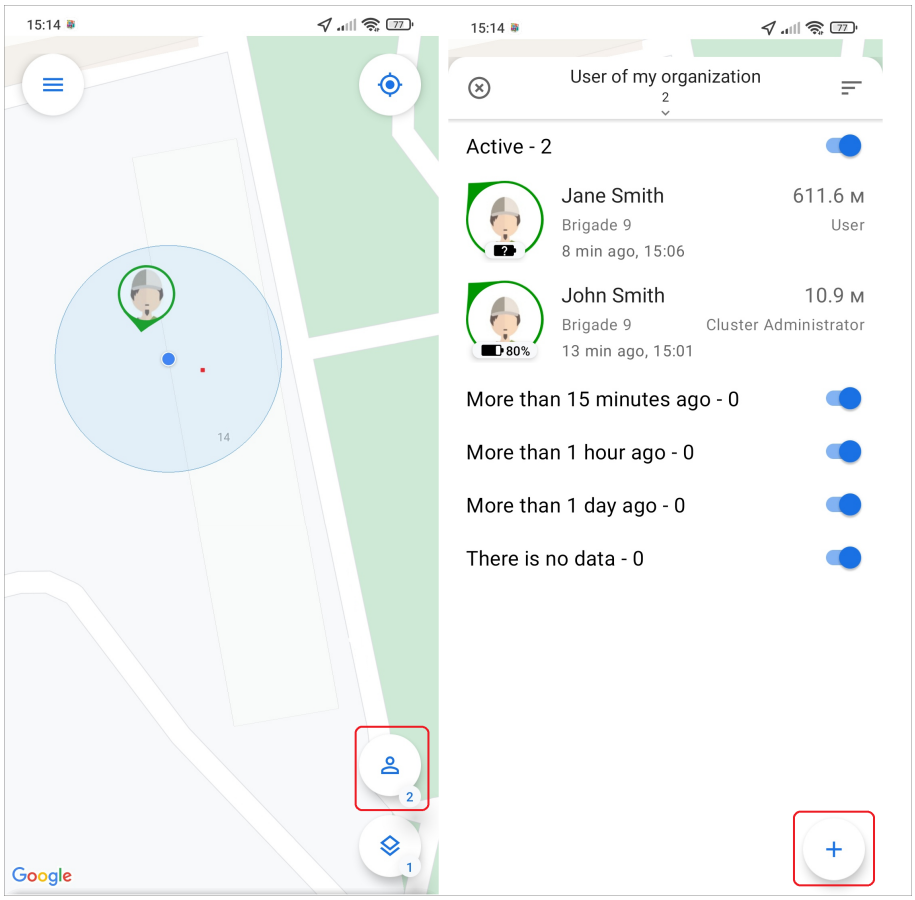


Fig. 2.63: Adding a new user

In the opened window, fill in the data and click “Apply” (Fig. 2.64). In this window you can enable/disable geolocation monitoring.

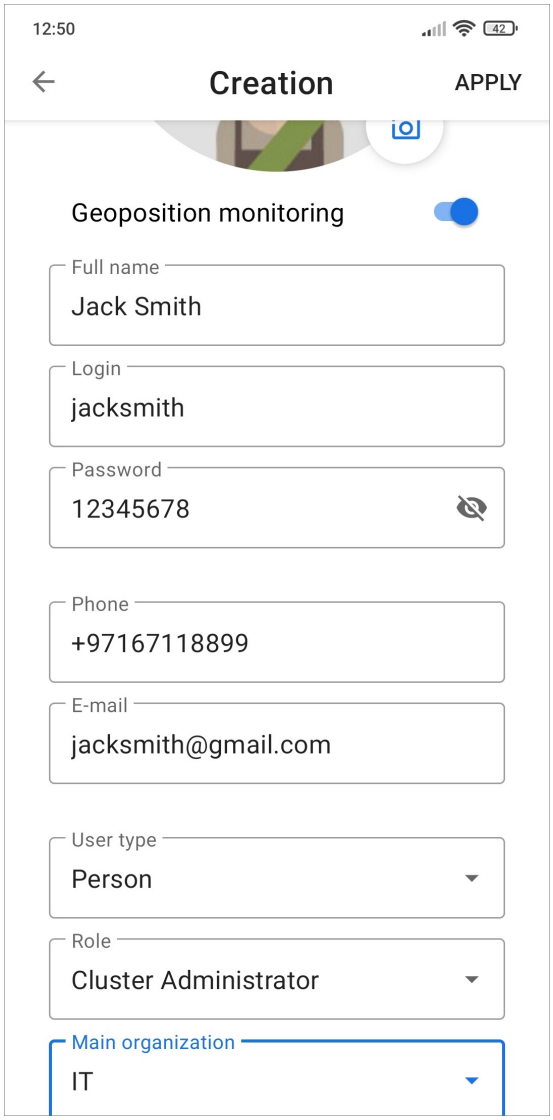


Fig. 2.64: Filling in the data for the new user

A new user will appear in the system. To send a link to an employee, go to his/her profile, generate a personal link and send it to the employee via any convenient messenger (Fig. 2.65). The link can be created an unlimited number of times for any registered user.

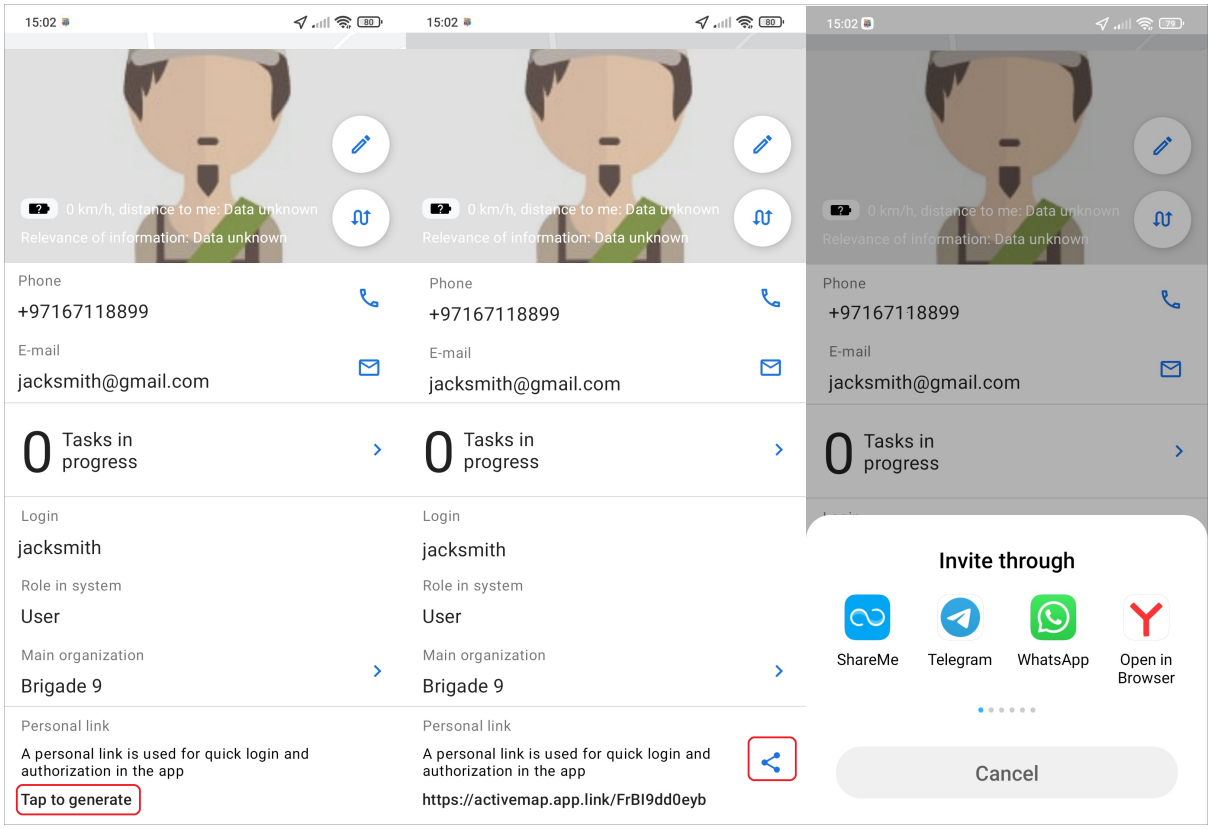


Fig. 2.65: Generating and sending a link for a new user

The user who receives the link will open it and immediately log in if the application is installed on the device (:numref:fig1055_4). If the application is not installed, the link will open in the Google Play store, and authorization will occur after the application is installed.

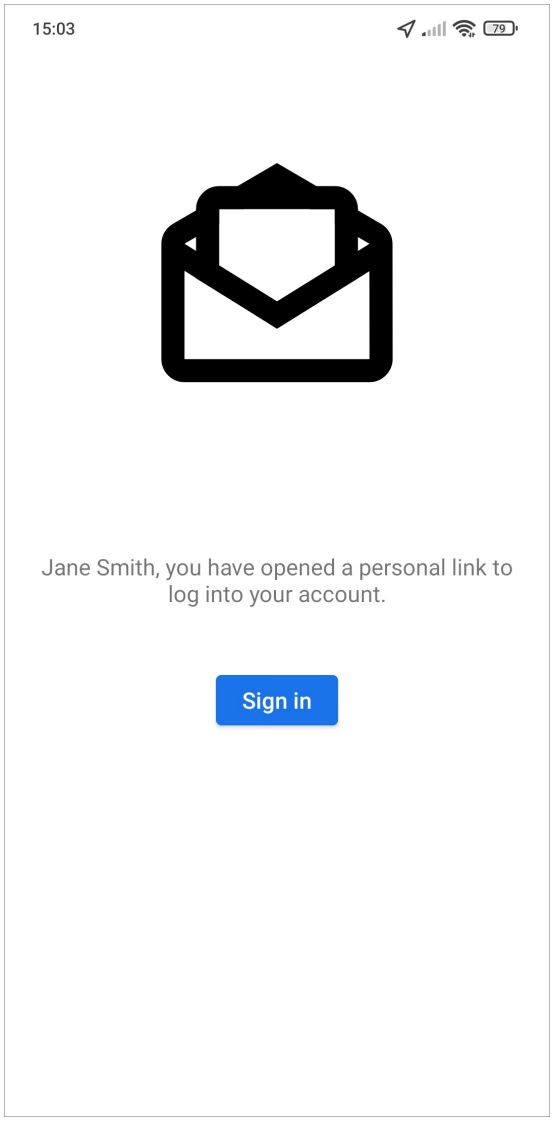
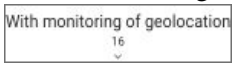
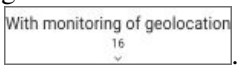


Fig. 2.66: User authorization via link

Managing user accounts

If you need to make changes to a user profile (not the current one), you have to find the user in the side menu navigation section *Map* → *Manage Users*  . You can find the user using the 

filter options. Click on the user and open account card. Then click on edit profile  , make changes and click "Apply". The current user's profile can be accessed from the side navigation menu (*Account management and roles in the system* (page 14)).

The application has functions for blocking and deleting users. These functions are not available to all roles. To block a user, find the user in the navigation side menu section *Map* → *Manage Users*  . Find the user by the filter parameters 

. Click on the user and open the account card. Then click on edit profile  , scroll down, click "Block", and confirm your action (Fig. 2.67). The user will disappear from the list of users in the

application and will not be able to authorize in the application. A user can be unblocked only in ActiveMap Web.

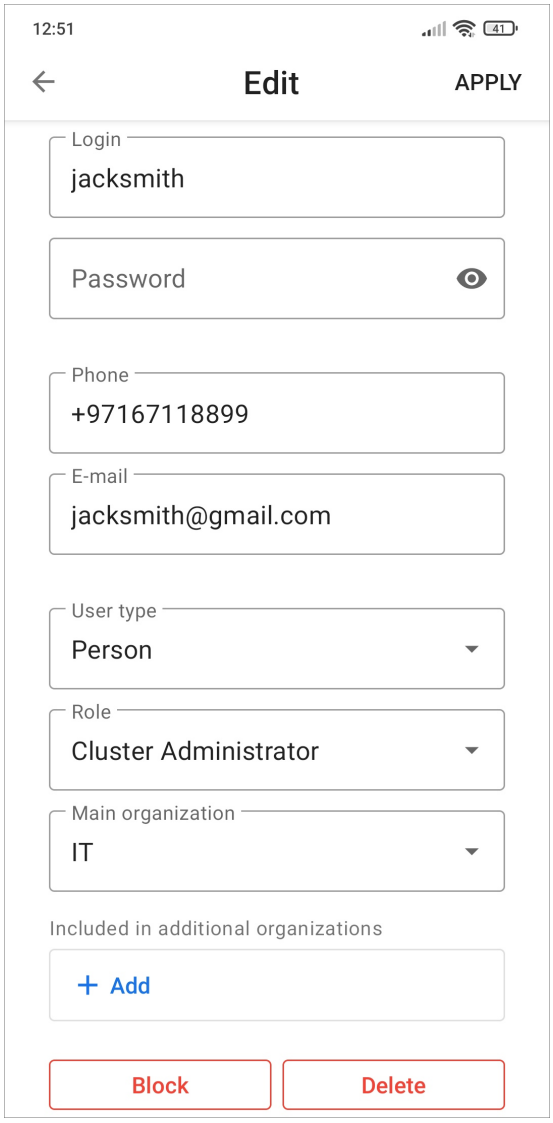
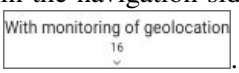


Fig. 2.67: Editing user profile

To delete a user, find the user in the navigation side menu section *Map → Manage Users*  using the filter parameters 

. Click on the user and open the account card. Then click on edit profile  , scroll down, click "Delete", and confirm your action (Fig. 2.67). The user cannot delete the account under which he/she is currently authorized.

2.10 Schedules

The application allows creating, editing and deleting schedules. This section is available for Administrator and Inspector roles. Schedules are needed when there is a large number of planned tasks of a similar type, that is, for tasks that should be performed constantly at certain time intervals.

When you select the "Schedule" section of the side navigation menu, you will be taken to the existing schedules. To create a schedule, click on "Add"  in the lower right corner. Specify the name of the schedule, select the organization of the creator and click "OK" in the opened window. If the schedule is intended to be used by several organizations, then the organization should be left blank. After that the "Schedule" window will open, where the author, title, organization, due date will be indicated. The user have to add existing task templates or create new ones, specify the start time - it can be deleted/disabled, and specific dates when the tasks will be created (Fig. 2.68).

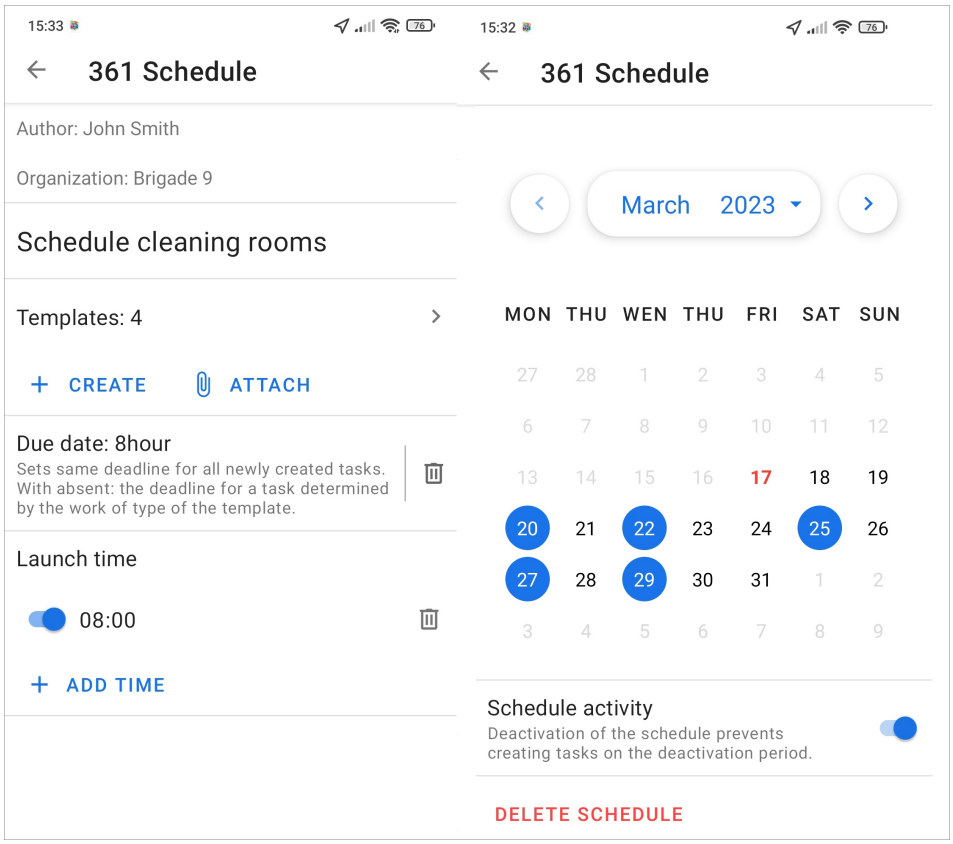


Fig. 2.68: Creating a schedule

You can also disable the schedule in this window to stop creating new tasks based on templates and remove the schedule from the system. To disable and enable the schedule, use the switch located to the right of the "Schedule Activity" block.

To create a new template task, press + CREATE. Fill in the form for creating a task template (similar to creating an operational task *Creating new tasks* (page 28)). If the organization that created the template differs from the organization that created the schedule, the system will not allow you to attach the task template to the schedule and will give an error. To attach

a previously created template, press ATTACH and select the required task template from the list. If the task template is not displayed in the list, you need to clear the filter (more about the filter *Task filter and advanced sorting* (page 21)).

The schedule is created online. To exit the schedule creation mode, just click the "Back" arrow in the upper left corner. To edit the schedule, find the necessary one in the list of schedules and click "Edit" (Fig. 2.69). This window also shows the total number of schedules in the system and the number of template tasks in each schedule. The schedule editing window is identical to its creation window.

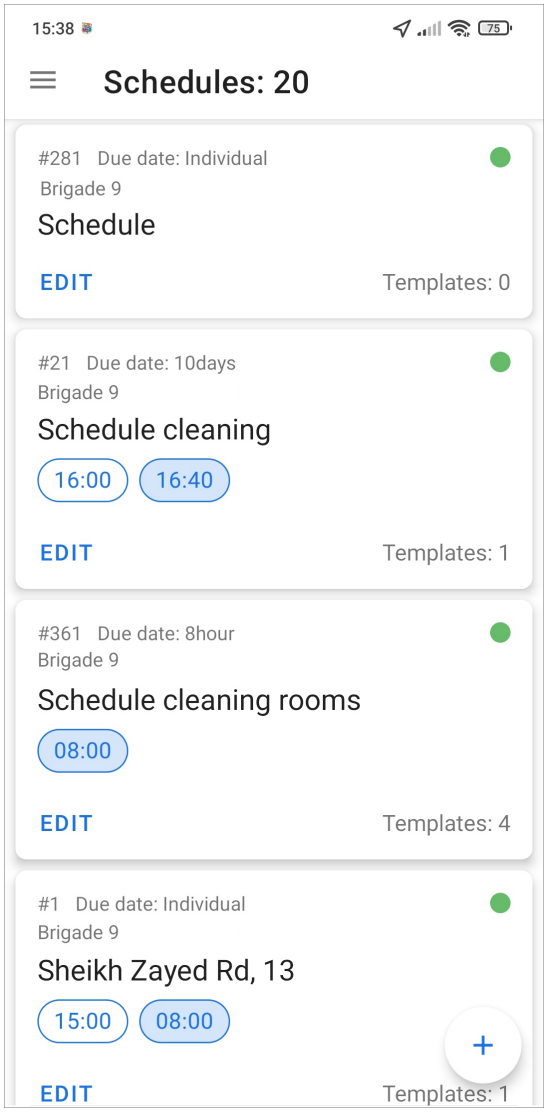


Fig. 2.69: List of schedules

You can delete schedule in the editing window by clicking on "Delete schedule" at the bottom of the window.

To detach a task template from a schedule or delete a task template from the system, click on the field with task templates in the schedule editing window. Press and hold on the task template until the toolbar appears. Then confirm the selected action.

Attention: If you delete a task template, it will be removed from the system. To remove a template from the schedule while keeping the template task in the system, you need to detach the task template.

2.11 Reports

The application provides the ability to work with reports. This section is available for Administrator and Inspector roles. To generate reports, select the "Reports" section from the navigation side menu. The list of available reports will open. Select the desired report and click "Generate new report". A window with the input of additional parameters (Fig. 2.70) will open. By default this is a date and time range, output file format, but the list can be extended depending on the reports in the system.

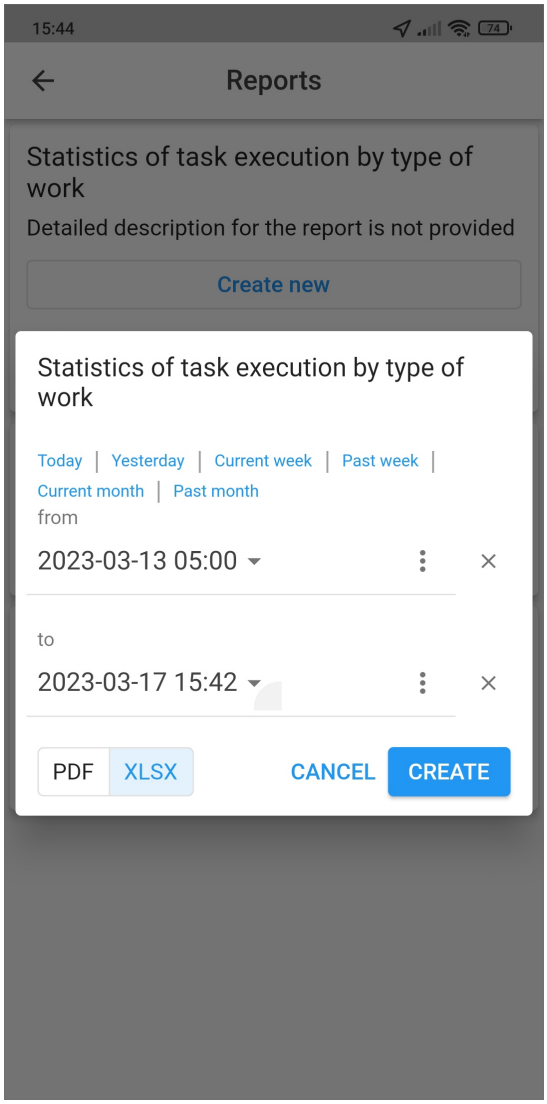


Fig. 2.70: Parameter input window

Click "Create" after entering the parameters. The generated report file (Fig. 2.71) can be

opened on the user's device with the appropriate applications for viewing the required formats.

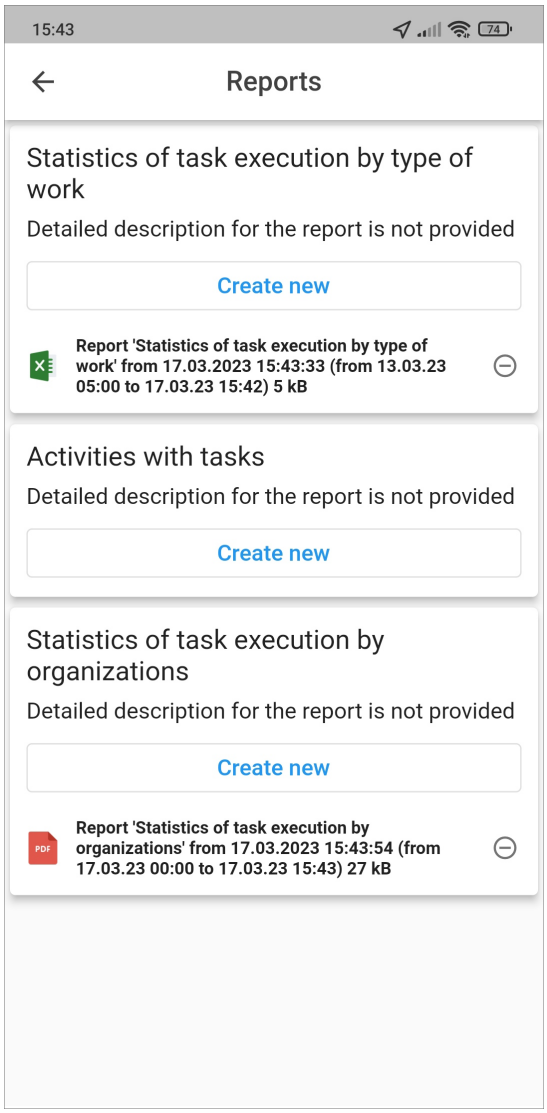


Fig. 2.71: Reports window

Non-standard reports are created upon request to Technical Support. Access to reports is granted in the ActiveMap Web web system.

2.12 Invoice module

The **"Invoice"** module is used to calculate the cost of work online. This module requires customization based on the list of services and materials used by the organization.

To generate an invoice, it is necessary to enable the "Invoice" module in the settings of the mobile application ActiveMap Mobile in the web system ActiveMap Web. You have to fill in information about organizations - the customer and the performer (legal name, account details, logos, signatures, seals, and other necessary information for display on invoices). Then, all fields of the "Materials and Services" table should be filled in based on the data of the list of services and materials used by the organization. The "Materials and Services"

table is filled in the desktop component of ActiveMap sytem. After filling in the table, you can proceed to generate an invoice. To do this, click “Add Media” and select “Invoice” while creating or performing the task. The “Invoice” window will open (Fig. 2.72). You can add the entire list of required materials and services by pressing the “Add Item” button, set the quantity of provided materials and services in the given units.

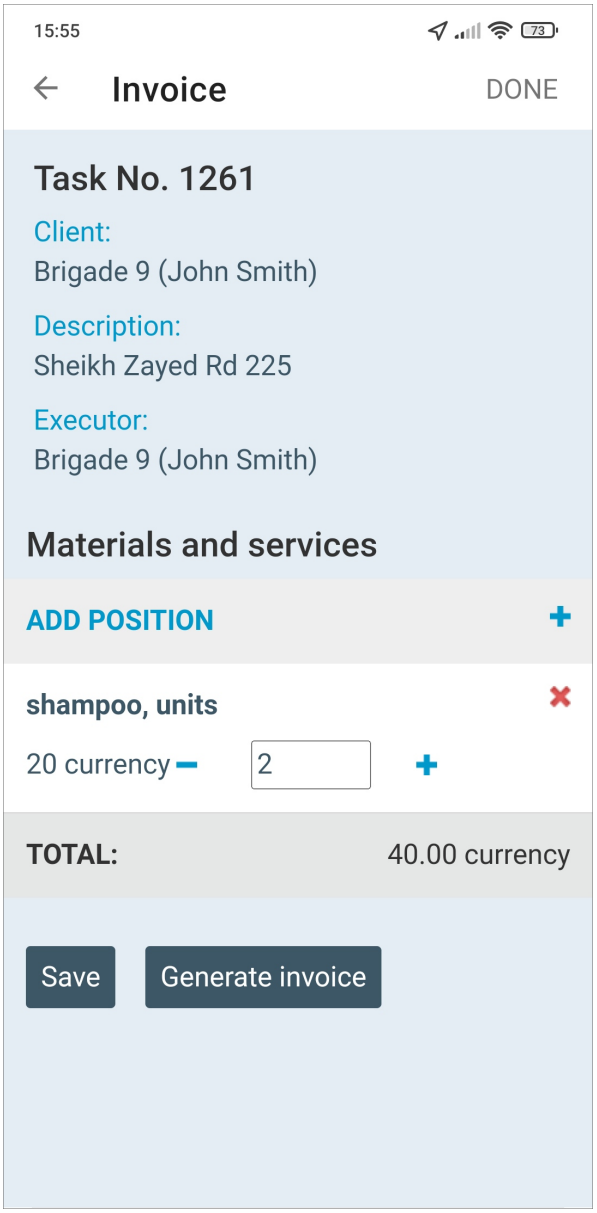


Fig. 2.72: Forming an invoice

In the materials and services selecting window, you can use the search, which will provide suitable results when you enter the text (Fig. 2.73). To add a material or service to the invoice you have to click on it.

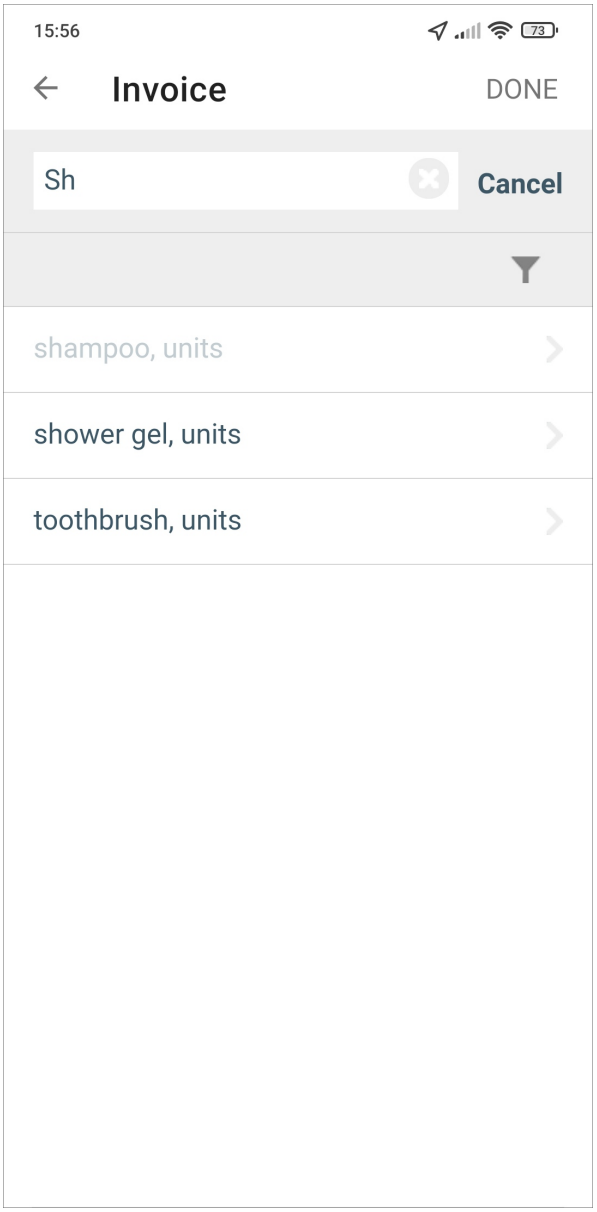


Fig. 2.73: Searching for materials and services

If the server is configured to use material and service groups, you can use the filter by clicking on  . On the left you will see a field for selecting material groups and services, click on it. A list of groups of materials and services will appear, select the desired one. After making your selection, click on the plus sign to the right of the selected group name and click "Apply". A filtered list will display, from which you should select the desired materials or services (Fig. 2.74).

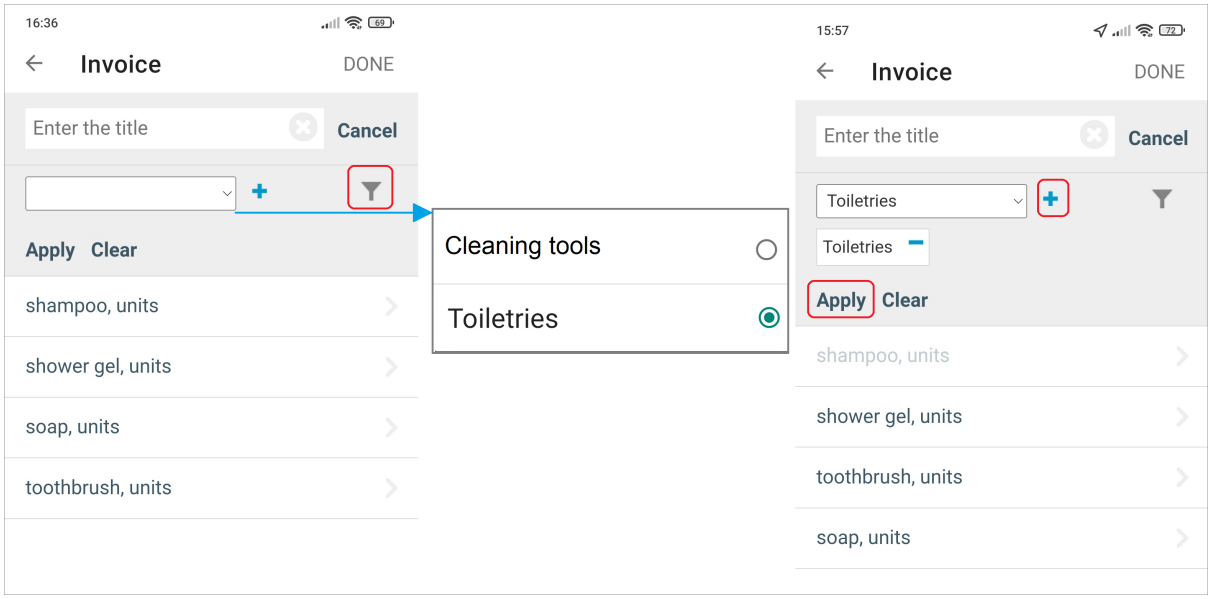
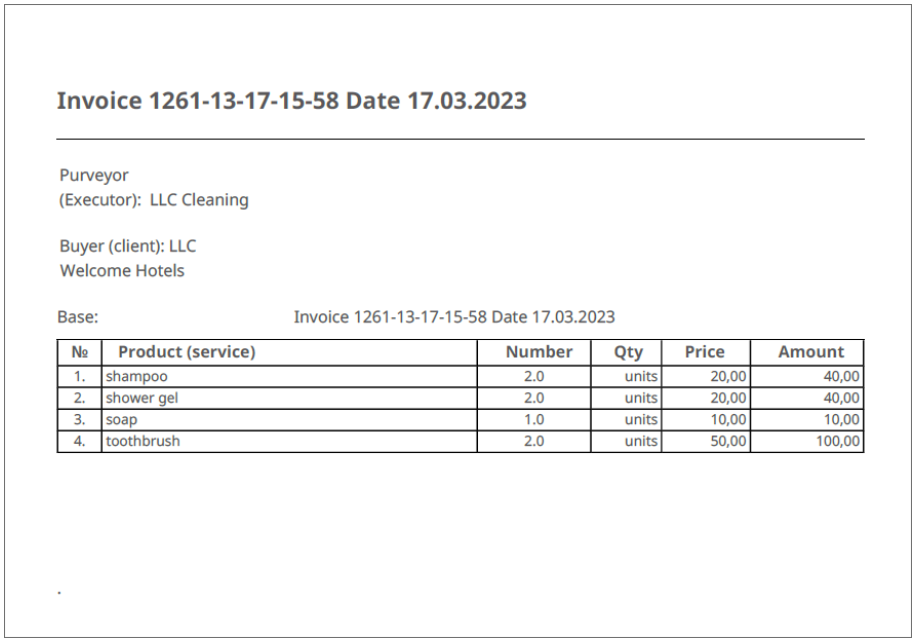


Fig. 2.74: Filter by material and service groups

To add other items to the invoice, repeat the above steps. To change the amount of materials and services, use the buttons to increase/decrease the quantity in the area of added materials and services. To remove an item from the invoice, click on the cross in the block with the item. After adding all items, start creating an invoice by clicking “Generate invoice”. Upon successful creation of the invoice, a message will appear: “The invoice has been created and attached to the task.” To return to creating/editing the task, click “Done”. You can save changes in the invoice. If there are unsaved changes in the calculations, the application will show a warning when exiting the “Invoice” window.

The invoice will be attached to the task in pdf format. Other users (with access to the task) will be able to see it immediately after it is generated (Fig. 2.75).



Invoice 1261-13-17-15-58 Date 17.03.2023

Purveyor
(Executor): LLC Cleaning

Buyer (client): LLC
Welcome Hotels

Base: Invoice 1261-13-17-15-58 Date 17.03.2023

№	Product (service)	Number	Qty	Price	Amount
1.	shampoo	2.0	units	20,00	40,00
2.	shower gel	2.0	units	20,00	40,00
3.	soap	1.0	units	10,00	10,00
4.	toothbrush	2.0	units	50,00	100,00

Fig. 2.75: Invoice

2.13 Automated photo comparison

In cases when you need to compare photos with some sample and get a quantitative result of the comparison, you can use the automated comparison of photos. The application has a mode of comparing photos without annotation, in which the entire image is compared. There are two comparison options: local (works when there is no internet connection) and online. After adding a photo it is compared with the already attached sample. After the comparison the application gives the result in the range from 0 to 100 (these are not the usual percentages, but calculated on the basis of the similarity threshold). The similarity threshold is set empirically for the group of photos being analyzed (e.g., 40 or 50). Enabling and configuring the automated photo comparison function is done on the ActiveMap Web web component.

A sample photo is needed for comparison (more about photo links in the *Using a template photos* (page 55) section). Immediately after taking a photo in the template photo mode, a local comparison takes place, and the result is displayed in the right corner. If it exceeds the set similarity threshold, the result will be highlighted in green, and the photo can be saved. If it is below the threshold, it will be highlighted in red, and it is necessary to try to take another photo for a more accurate result (Fig. 2.76). If the similarity threshold is not specified in the settings, the background of the result will be white. The local comparison result data is saved in the system.

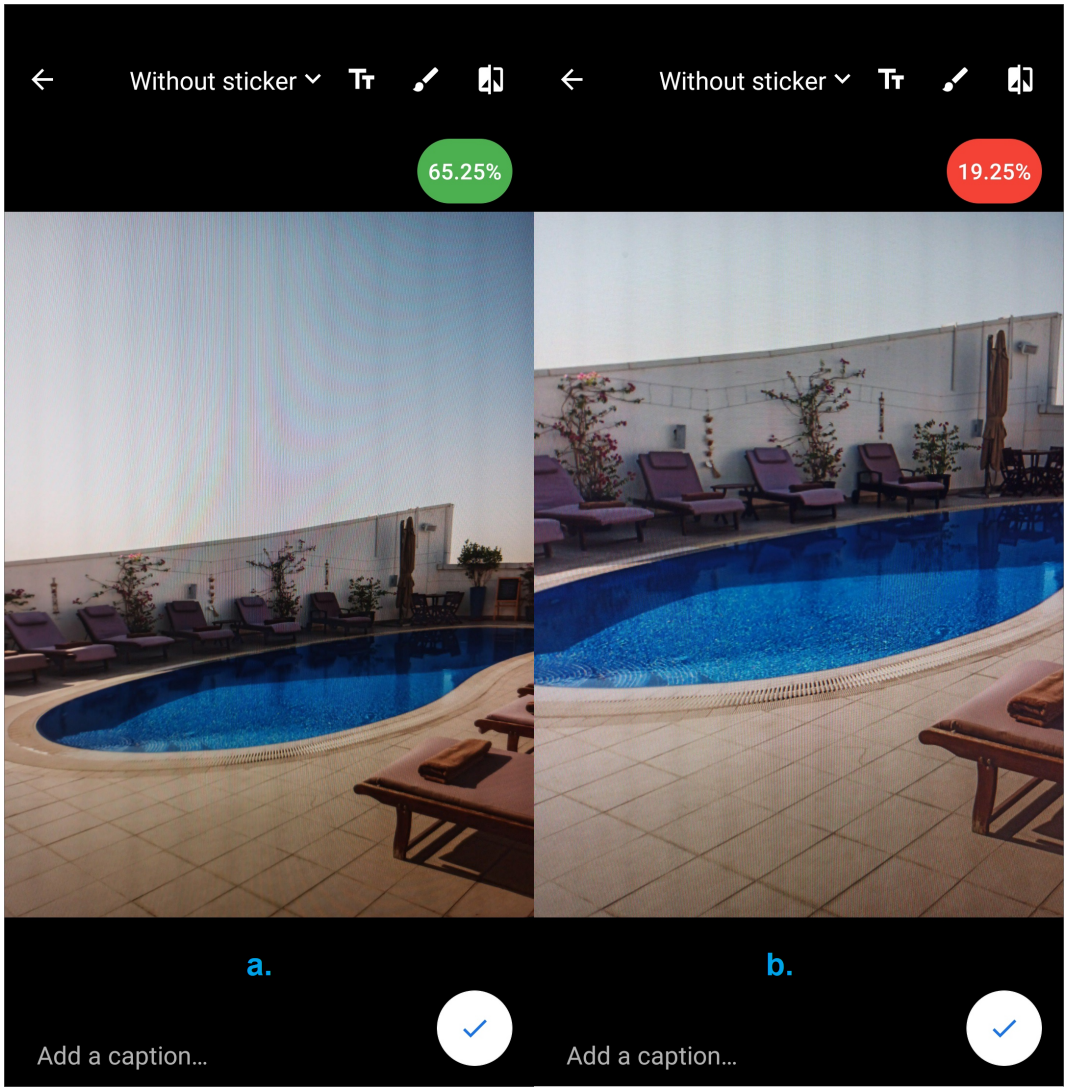


Fig. 2.76: Picture comparison: a - similarity found, b - no similarity found

The minimum value of the similarity percentage from all results of automated local photo comparison with their photo sample will be displayed in the task list view (Fig. 2.77).

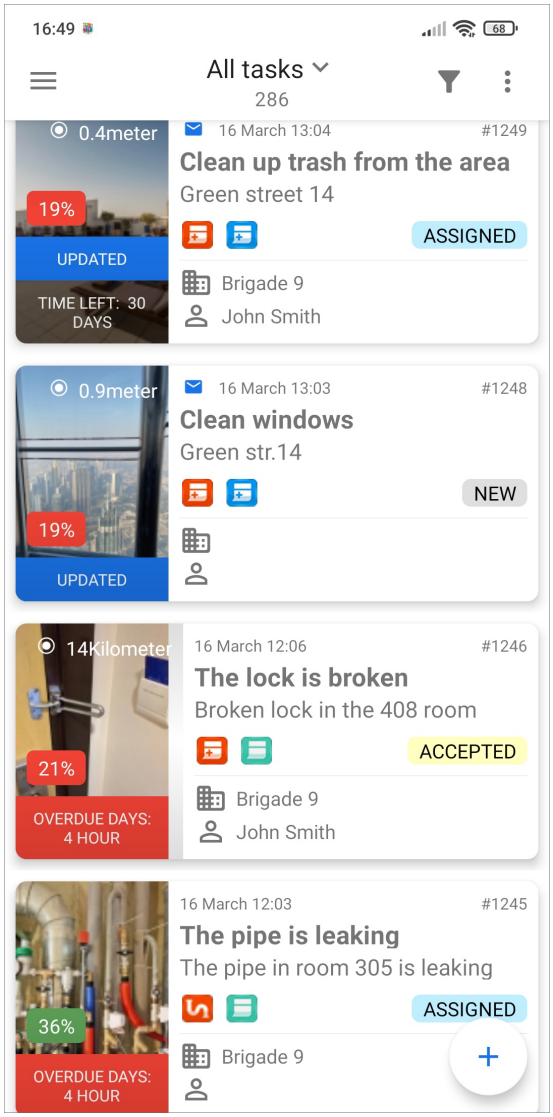


Fig. 2.77: Displaying the results of local photo comparison

If an online comparison result is required, you can use the button in the top right corner of the photo editing window. Different models are used for comparison, so the comparison results will differ. Online comparison results can be accessed using the “Compare angles” option in the media file editing menu (for more details, see *Adding files and media* (page 33)).

CHAPTER

THREE

ABOUT APPLICATION

To get detailed information about the application, select the “About” section from the side navigation menu. A window containing the following sections will open (Fig. 3.1):

- About the company,
- About the software,
- History of changes,
- Privacy Policy.

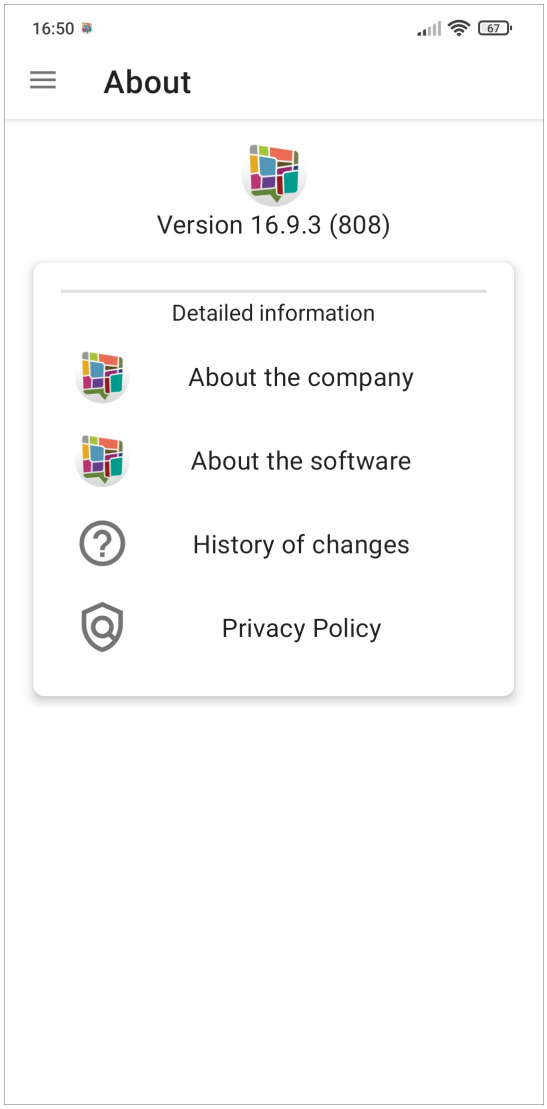


Fig. 3.1: “About” window

The “About” window contains information about the current version of the application installed on the user’s device. The version is also indicated on the side navigation menu to the right of the “About” section.

“About the company” section shows brief information about the Activemap Computer Systems Design company. At the bottom of the window, there is the “Details about the company” button, containing a link to the website: https://activemap.me/.

“About the software” section displays information about the functions and features of the application. In the lower part of the window there is a “Details about the ActiveMap complex” button, which contains the link https://activemap.me/ to the company’s website where you can view detailed information about the ActiveMap software package, which includes this application.

“History of changes” section displays information about the improvements and changes in functionality in the application versions.

“Privacy Policy” section opens in the browser a link to the Activemap Computer Systems Design company’s website with the privacy policy information.

CHAPTER

FOUR

SETTINGS

4.1 Application settings

To access the application settings, select “Settings” on the navigation side menu (Fig. 4.1). Calling the side navigation menu is described in *Sidebar navigation* (page 18).

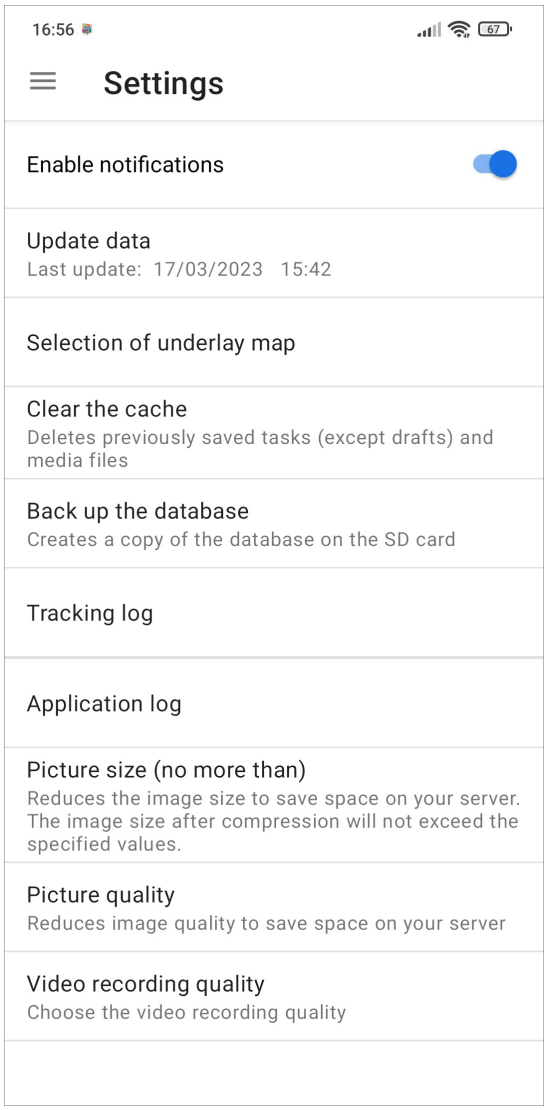


Fig. 4.1: “Settings” window

4.1.1 Enabling notifications

In the “Settings” section of the side navigation menu, to the right of the “Turn on notifications” item there is a toggle switch “Off”/”On” to disable/enable the mechanism of PUSH notifications. PUSH notifications are displayed in the notification bar of the user’s device (Fig. 4.2).

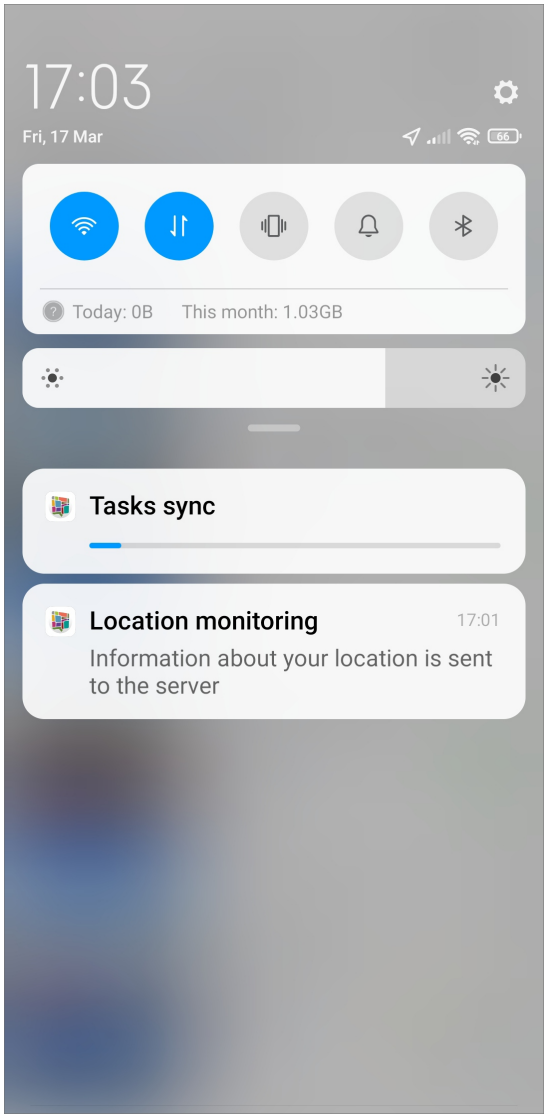


Fig. 4.2: Displaying application notifications on the device notification panel

Clicking on a PUSH notification allows to go to the updated task (if the notification contains information about one task) or to the list of tasks (if the notification contains information about updating several tasks).

4.1.2 Choosing a basemap

This section is designed to change the map background. The list of basemaps includes 6 maps to choose from (ActiveMap, Google (Regular), Google (Hybrid), Google (Satellite), Google (Location), OpenStreetMap) (Fig. 4.3).

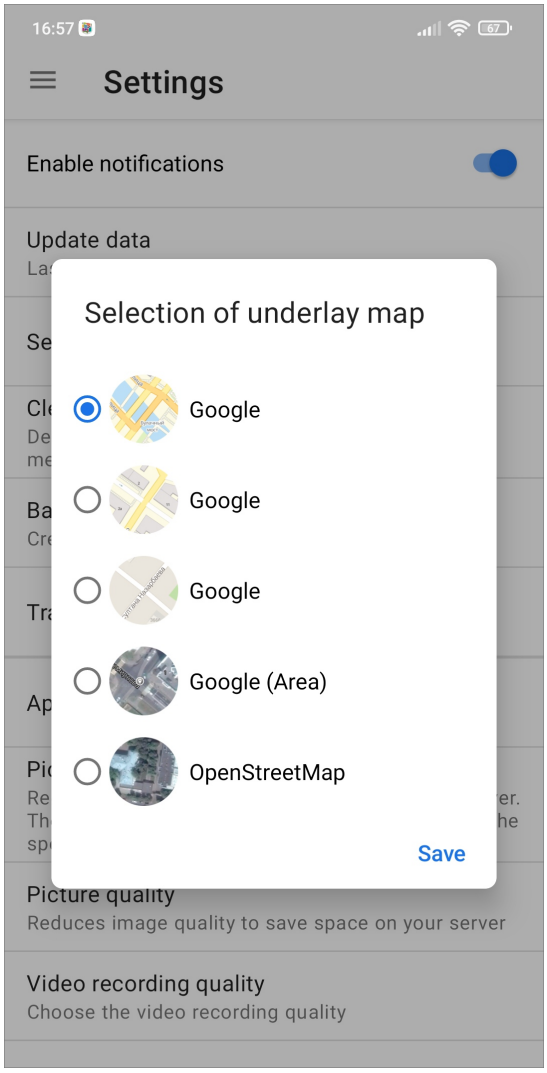


Fig. 4.3: Selecting a basemap

4.1.3 Media files settings

These settings are available in the following sections of the navigation menu:

“Image size (no more than)” - setting the image size to save space on the server. Image size after compression will not exceed the specified values in pixels (Fig. 4.4).

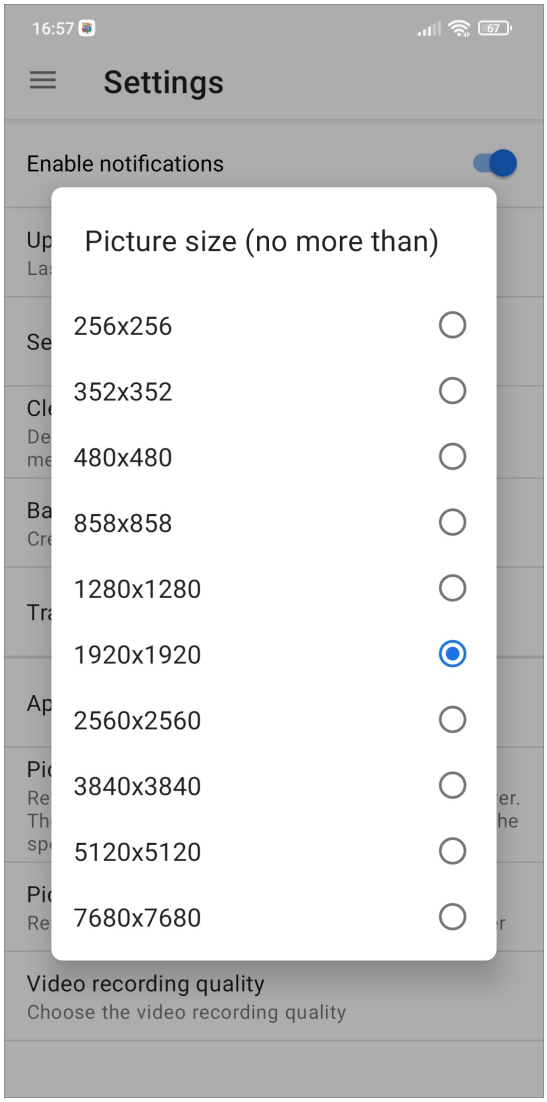


Fig. 4.4: Setting the image size

“Image quality” - setting the image quality to save space on the server (Fig. 4.5).

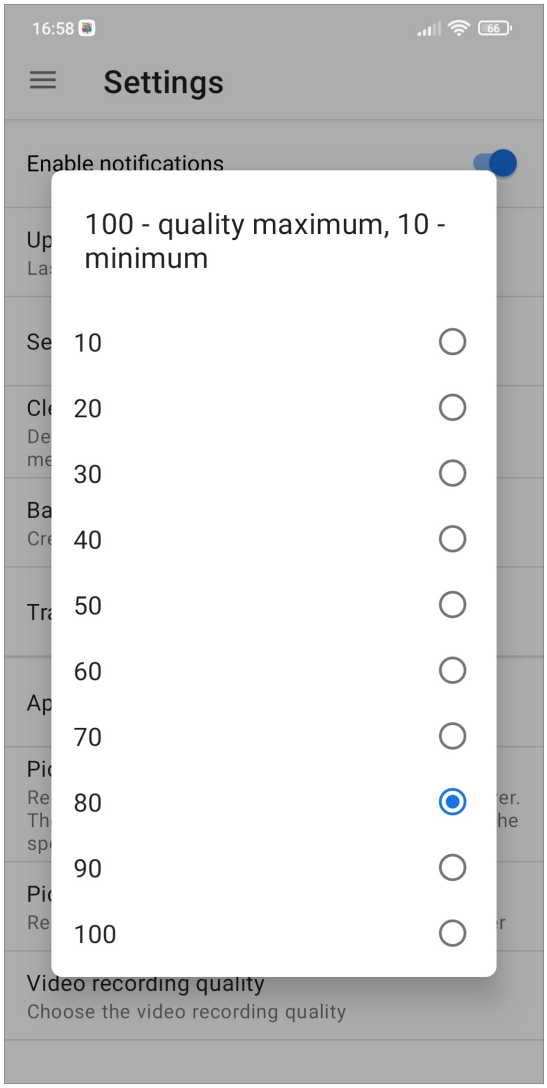


Fig. 4.5: Setting the image quality

“Video recording quality “ - setting the quality of recorded video files (Fig. 4.6).

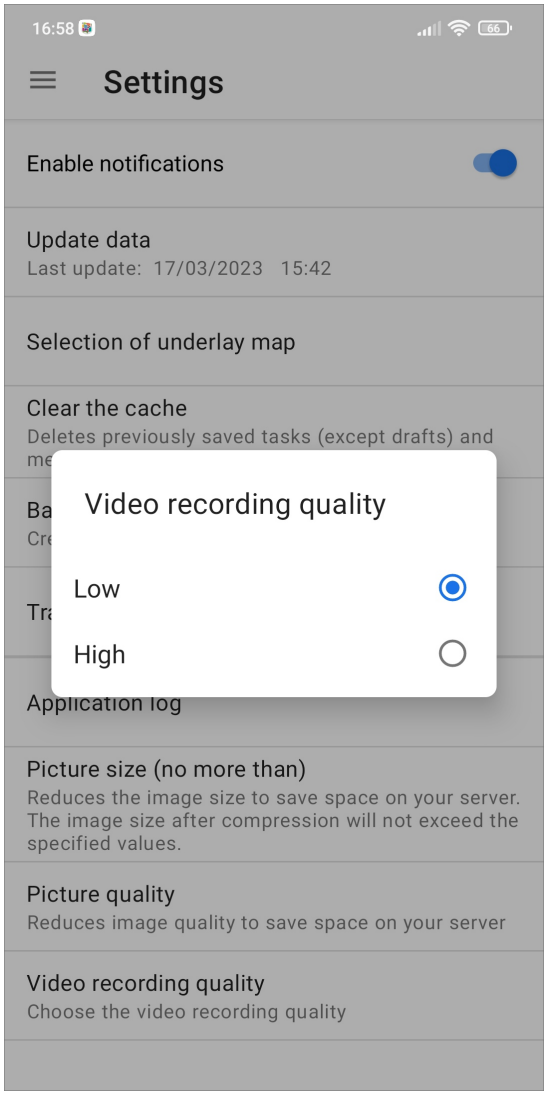


Fig. 4.6: Setting the recording quality

4.1.4 Other settings

In the side navigation menu there are sections of general application settings:

- **“Update data”** - explicit update of all data by synchronizing with the server (required when updating settings on the server);
- ** “Clear cache” ** - deleting temporary files (when cleaning is completed, the message “Cache cleared successfully” will appear on the screen);
- **“Make a backup copy of the database”** - creating a copy of the database on the memory card of user’s device with the possibility of further use on the computer (when copying is completed, the message “Backup successfully created” and the path to the saved copy will appear on the screen);
- **“Tracking log”** - exporting logs of the mobile device movement into a txt file, which can be sent in any way convenient for the user;
- **“Application log”** - exporting application logs to an archive with the ability to send it in any convenient way for the user.

CHAPTER

FIVE

EXITING THE APPLICATION

You can simply close the app on your device to terminate. But if geoposition monitoring is enabled, the user's location data will still be sent to the server in the background. To stop sending data, you have to disable location monitoring in the user account. The instructions for doing so are described in the section *Account management and roles in the system* (page 14). After that, you can close the application. It is also possible to exit the user account of the application without disabling the monitoring settings. To do this, press "Logout" on the side navigation menu and close the application.

CHAPTER

SIX

GLOSSARY

Applied software suite is a set of interconnected programs designed to solve problems of a certain class of a particular subject area and interact with the user.

Attribute data are values describing features of objects. Attribute data types: integer, real, text, date, date and time, geometry.

Basemap is the dominant or underlying layer in a given map that provides geographical context to the map and other dataset layers above it. Users visualize tasks, service objects, and thematic layers above the basemap, as well as use it for navigation through a map and getting general information about the area of interest.

Chief inspector is an employee responsible for managing tasks in the System.

Client Organization is an association of users who make their requests via the mobile application, monitor their status, are capable of evaluating the work performed. User rights for operating the System are restricted.

Cluster is an association of several organizations for the purpose of enabling the in-process control of the performance of departments.

Cluster administrator is an employee whose job responsibilities include the cluster management as follows: control of organizations and users within his/her cluster, access right distribution to users within his/her cluster to layers and reports, and the task management within his/her cluster.

Cluster inspector is an employee responsible for managing tasks within his/her cluster.

Clusterization is the representation of raster layer objects located nearby by a single label on a map.

Contract is an entity for accounting and planning the task accomplishment by organizations under contractual obligations.

Custom fields are attribute fields which can be customized in the system versus features of a project underway, and be referenced to certain work items.

Data table is a structured database of same-type objects within the bank of spatial data.

File label (sticker) is a textual mark in a picture.

Invitation (an invite link) is a link containing information on the server address, login, and password of a user to simplify the process of authorization in the mobile application.

Layer is a visual representation of geographical data in the environment of any digital map.

Layer group is a set of layers grouped according to thematic or other specified criteria.

LDAP (Lightweight Directory Access Protocol) is an open, vendor-neutral, industry standard application protocol for accessing and maintaining distributed directory information services over an Internet Protocol (IP) network.

Legend is a set of symbols and explanations on a map.

License is a file containing information on the acceptable quantity of users, validity period, and allowing to link the server software of the System to the equipment.

Organization administrator is an employee whose job responsibilities include the management of his/her organization as follows: the creation of users, the provision of access to layers and reports within his/her company, and the task management within his/her company.

Organization inspector is an employee responsible for managing tasks within his/her company.

Organization user is an employee who uses the System to accomplish assigned tasks.

Raster layer represents data in the form of geographically-referenced images as well as fragments of raster images displayed in the same projection and prepared for each level of map detail.

Reference table is a systematic data table intended for facilitating users to handle attribute information on objects.

Service objects are layers containing objects of interest of the user organization due to their relation to business activity of the involved organization.

Schedule is a tool that enable to automatically create and assign template tasks at a certain time with a specified periodicity.

The System administrator is an employee responsible for configuring the System: managing clusters, organizations, users of all roles, reference tables for tasks (work types, stages, priorities, custom fields, stickers), as well as the distribution of access rights to layers and reports.

Thematic layer is a spatial data bank layer which objects are interrelated by the same topic.

Timelapse-video is a video file comprising a series of pictures took via a video camera during a long time period.

User tags is an entity allowing to group users against a specified attribute (e.g., the phone model).

User type is a user characteristic (a human being or a vehicle) to determine the user mapping settings versus the type selected.

Vector image is a representation of graphical objects and images based on the use of geometric primitives such as points, lines and polygons.

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