ActiveMap Web user manual 3.39.0

Activemap Computer Systems Design

Mar 27, 2023

CONTENTS

ANNOTATION

This document is intended for study of:

- purpose of the ActiveMap Web software product (hereinafter referred to as the Program), the functions performed by the program and its operation;
- sequence of user actions that ensure the downloading, launching, execution and termination of the ActiveMap Web program;
- functions executed by the Program, format and possible options for commands by means of which the user carries out the loading and controls the execution of the Program;
- messages generated by the Program during its execution, their content and the corresponding operator's actions.

CHAPTER

ONE

GENERAL INFORMATION

1.1 About Program

The software product ActiveMap Web is a multifunctional software tool for visualisation of spatial data, publishing and displaying geoinformation resources, developing custom web-based portal applications based on web technologies. The Program provides publication of basic cartographic layers, dynamically updated specialized layers, satellite images.

ActiveMap Web ensures collection and integration of disparate information, visualization of created tasks with display of attachments and the history of their execution and geo-referenced object data on the map.

ActiveMap Web is part of a multi-component web-based ActiveMap system for remote employee management.

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/.

1.2 System requirements

The program is created using web technologies, that allows to run it from any personal computer with Internet access. To organize the dispatcher's workplace, a personal computer with technical specifications that meet the following requirements at a minimum is required:

- Processor: Intel Core i3,
- Operating system: Windows 7,
- Internet access speed of at least 1 Mbps.

The program does not require additional installation of third-party software on the workstation. The program opens using internet browsers such as Internet Explorer, Mozilla Firefox, Opera, Google Chrome, or Microsoft Edge.

CHAPTER

TWO

WORKING IN THE PROGRAM

2.1 Running the program

To run the Program, open an Internet browser (Internet Explorer, Mozilla Firefox, Opera, Google Chrome, Microsoft Edge), enter the address of the web page of the Program in the address bar. The start window (Fig. 2.1) appears.

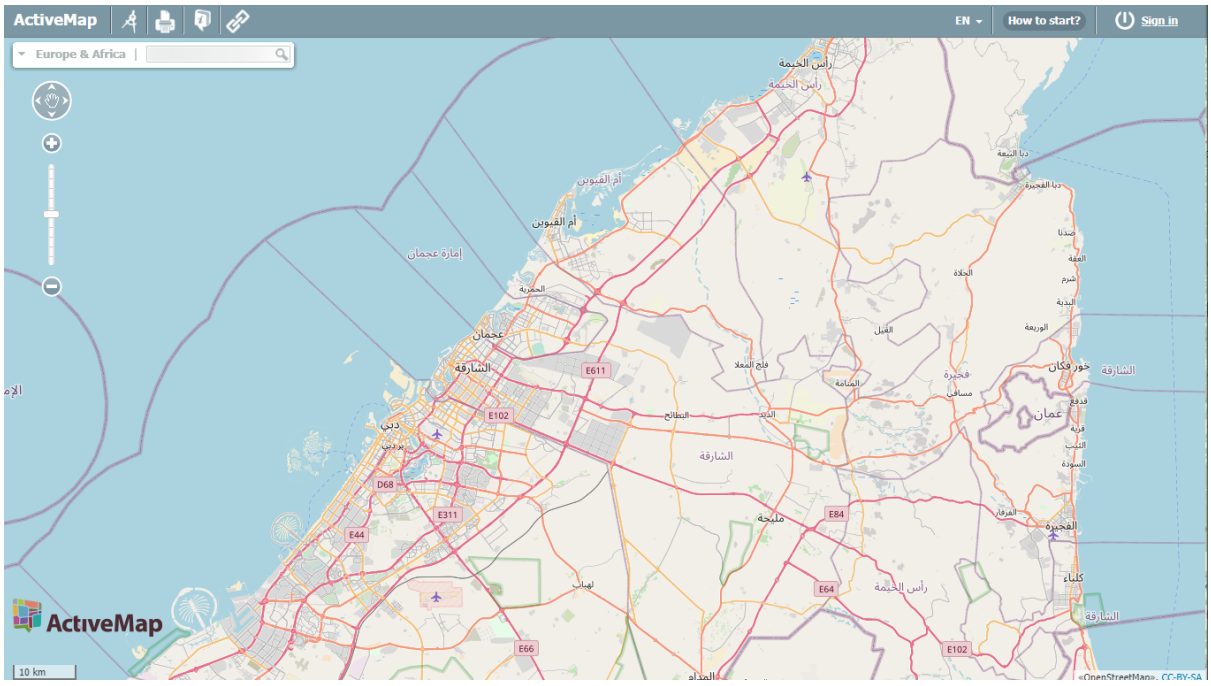


Fig. 2.1: Start window

To log in to the program, click the “Sign in” button in the top right corner of the page and enter your login and password in the authorization window (Fig. 2.2).

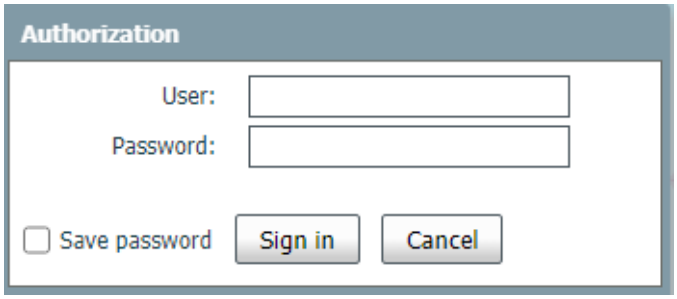


Fig. 2.2: Authorization window

After logging in, the main window (start page) of the program is loaded with a functional set corresponding to the user's access rights (Fig. 2.3).

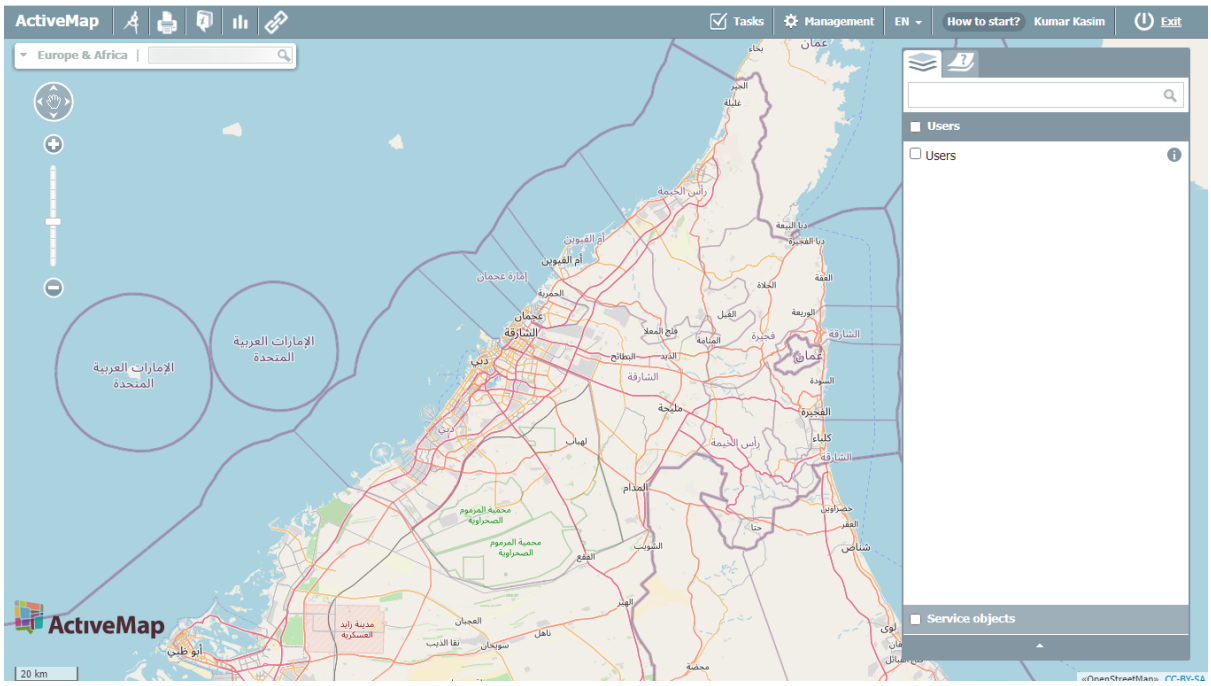


Fig. 2.3: Start page

Data access settings are set by the administrator individually for each user depending on his/her role. Roles differ from each other by the set of actions they can perform in the system. Roles are assigned by administrators when creating user accounts. There are the following role types:

- **"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.

2.2 User interface

The main window of the Program contains (Fig. 2.4):

1. Map display area.
2. Toolbar.
3. Basemap controls with a search bar.
4. Thematic layer control panel.
5. User panel.
6. Scale bar.
7. Scale ruler.
8. Map navigation panel.

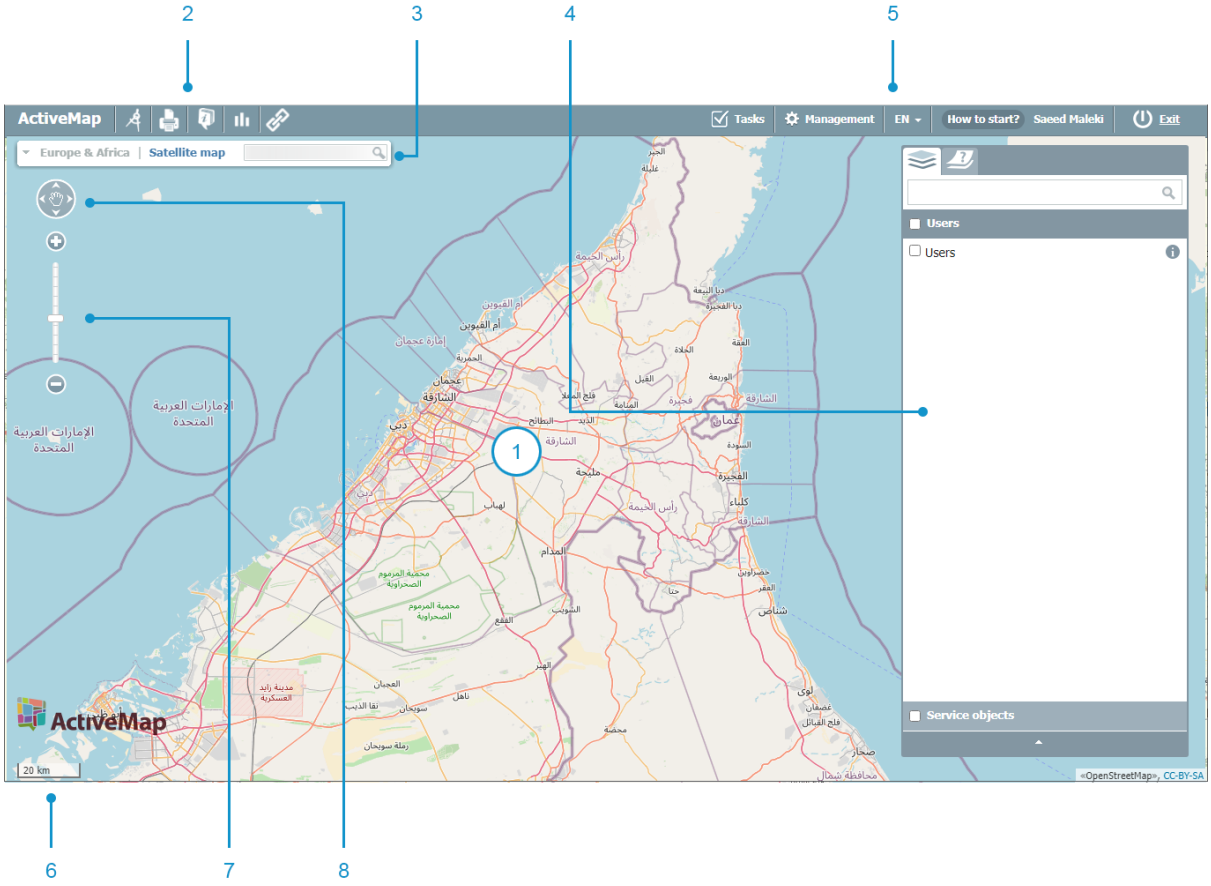


Fig. 2.4: Elements of the main window

2.3 Selecting basemap

Basemap is the layer that is the main or primary in a specific map. Users usually “overlay” their own data on top of the basemap, as well as use the basemap to create new layers. The term “basemap” is equivalent to the term “map base layer.”

The Program provides two types of cartographic basemaps: maps and satellite imagery (Fig. 2.5).

Fig. 2.5: Choosing the basemap

The active base layer in the search bar is grayed out. Left part of the panel contains the names of basemaps with schematic maps, right part - basemaps with satellite imagery. To switch from a schematic map to satellite imagery, click on the name of the basemap with satellite imagery (Fig. 2.6).

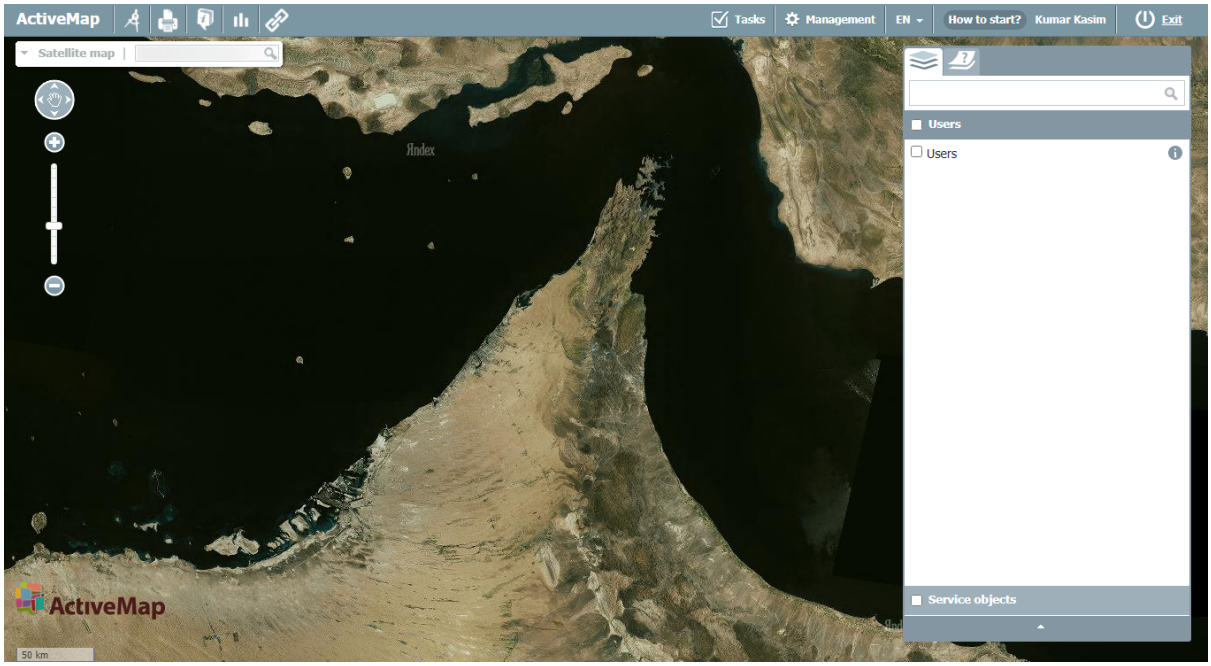


Fig. 2.6: Basemap with satellite imagery

To return to the schematic map, click the button with the name of the corresponding basemap.

Selecting one of several basemaps of the same type is supported. If there are several basemaps of the same type, an arrow next to the basemap name appears, which opens a drop-down list with the names of other basemaps (Fig. 2.7).

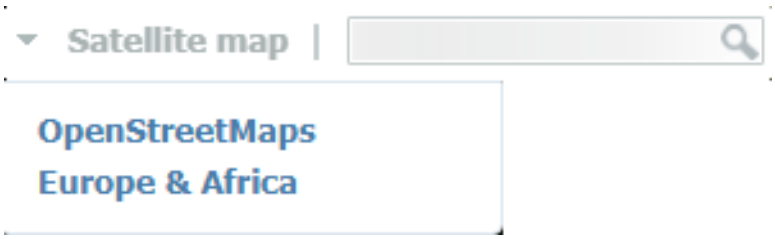


Fig. 2.7: List of base layers with schematic maps

2.4 Searching for an object by address on the map

To search for an object on the map, enter the address in the search field (Fig. 2.8). To search for a city, enter its name, for a street - the name of the city, street, or just the name of the street, for a house - the name of the city, street, house number, or just the name of the street and house number. You can use a regular or virtual keyboard to enter values. All values can be entered without a comma or case sensitivity.

Fig. 2.8: Object search field

After clicking on the button with magnifying glass or pressing “Enter” on the left side of the screen, a window with found objects will appear on the information panel. Clicking on the line with the found object will select it, and the map will move to its location, where a list of found objects will be presented. To display search results on the map, click on the desired option in the “Search results” window. The found object will be located in the center of the screen and marked with a contrasting icon (Fig. 2.9).

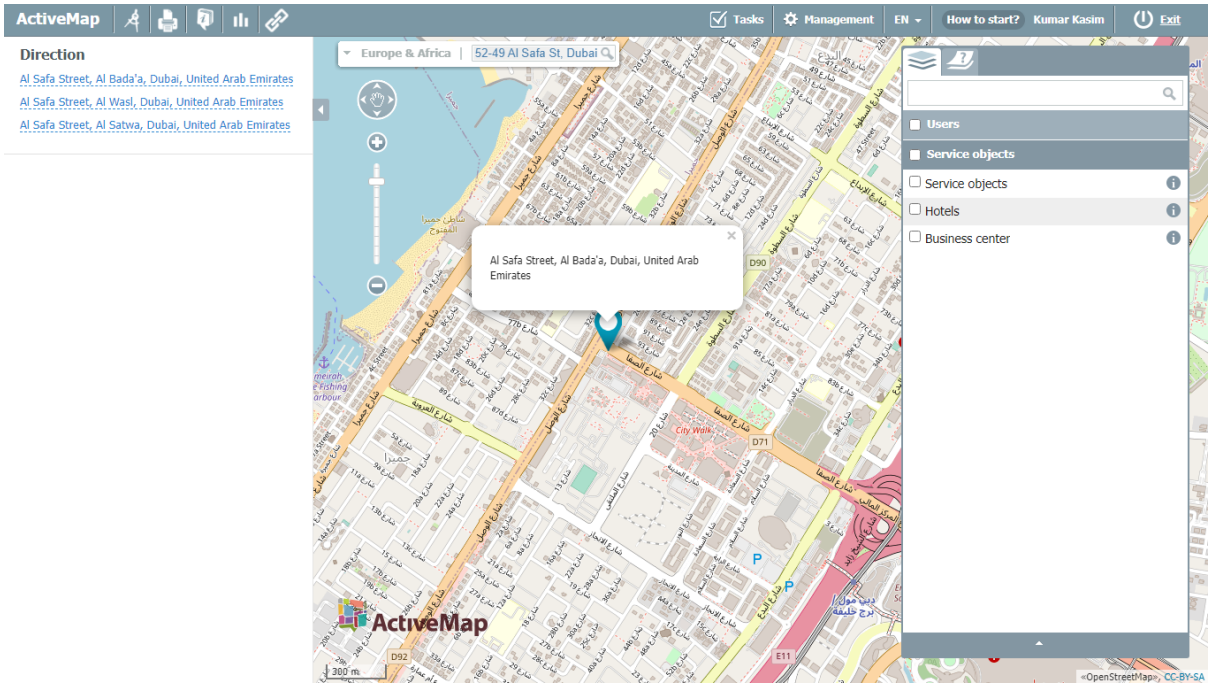


Fig. 2.9: Object search results in the list and on the map

2.5 Layer control panel

The Layer control panel is located on the right side of the page. The panel contains two tabs:

- “Layers”,
- “Legend”.

In the “Layers” tab, unauthorized users see only default layers, while each authorized user has access to a set of available layers (Fig. 2.10).

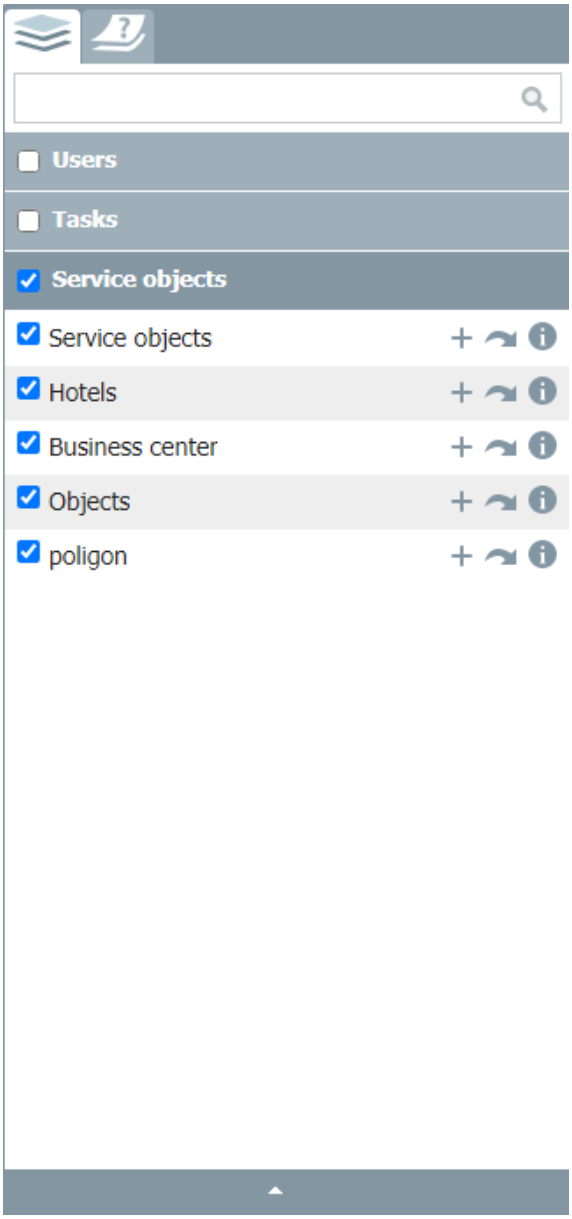


Fig. 2.10: “Layers” tab of the Layer control panel

When switching to the “Legend” tab, a list with the legend of the objects of the currently selected layers is displayed (Fig. 2.11).

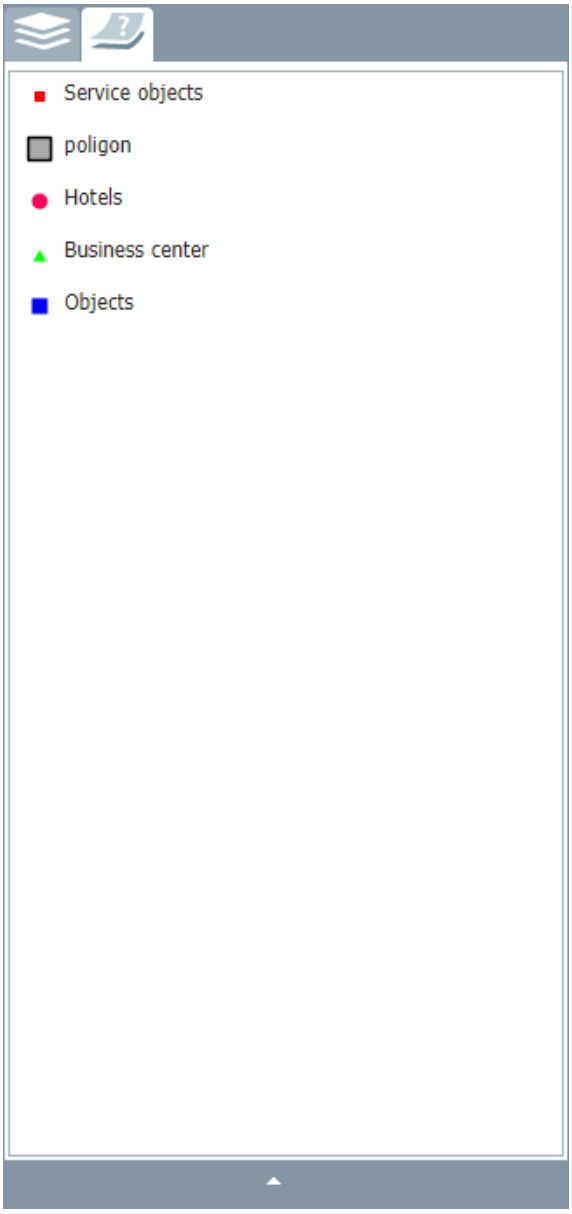


Fig. 2.11: “Legend” tab of the Layer control panel

Thematic layers are combined into groups. To view a particular group layer, check the box to the left of the layer name (Fig. 2.12).

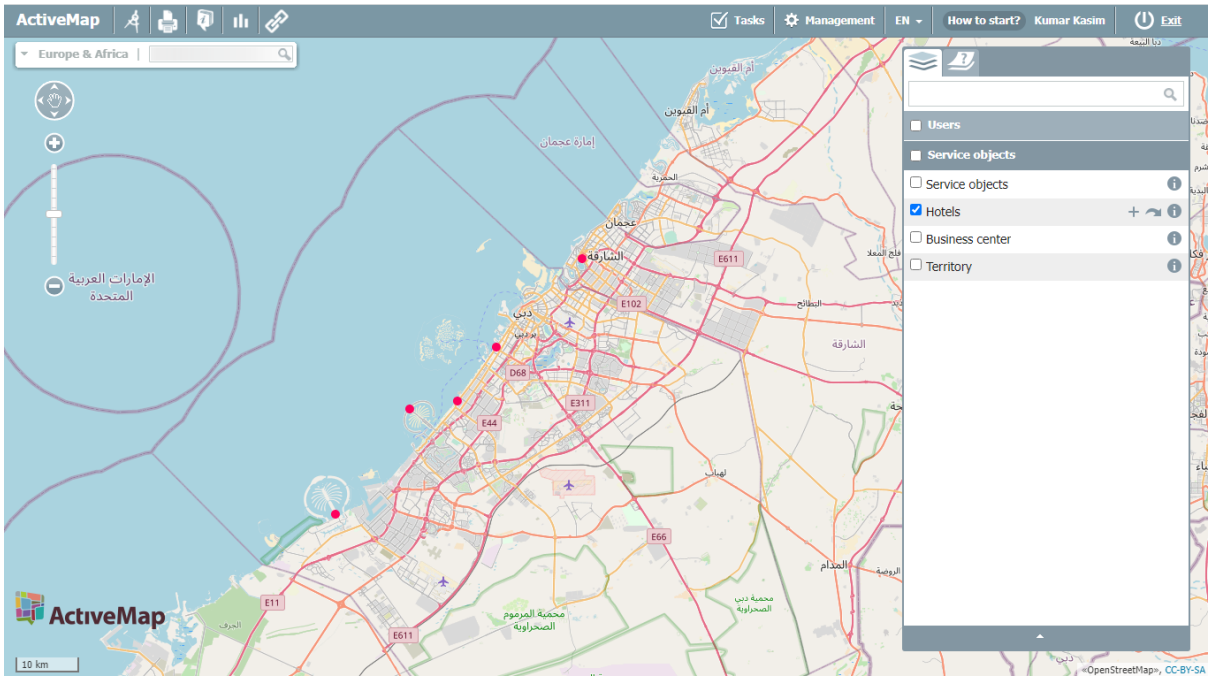


Fig. 2.12: Displaying the selected layer on the map

Clicking on the button  next to the layer name opens a sidebar on the left side of the screen with filter, legend and, if available, metadata tabs.

The “Legend” tab shows a set of symbols for displaying layer objects on the map (Fig. 2.12). This set may vary depending on the type and style of the layer.

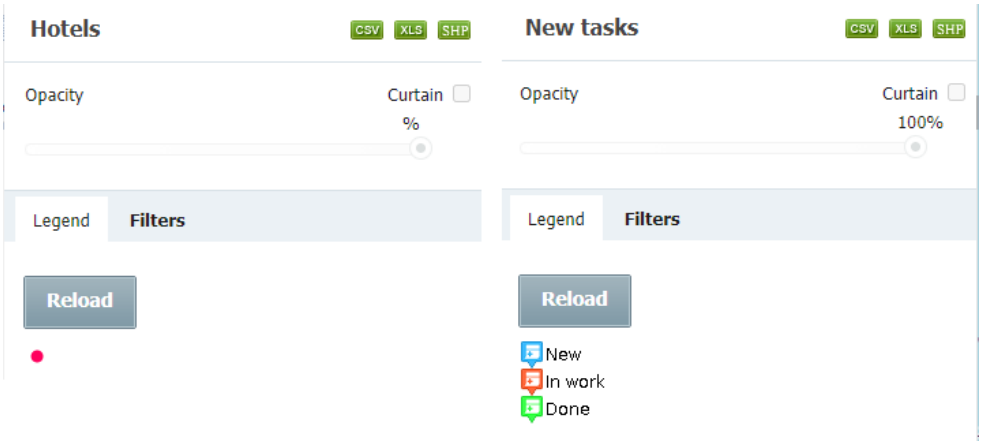


Fig. 2.13: Examples of legends for different layer types and styles

The “Filter” tab allows to select objects in the enabled layer based on parameters (Fig. 2.14).

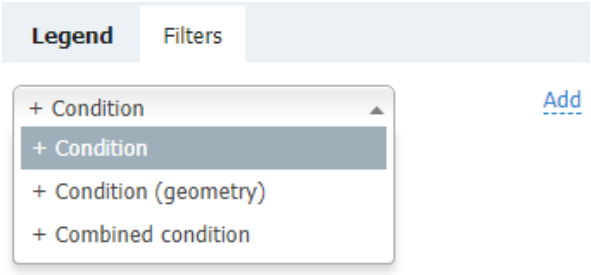


Fig. 2.14: Filter types

You can filter by layer attributes (“Condition” parameter), as well as by objects included in the drawn area boundary on the map (“Condition (Geometry)” parameter). To filter by these two categories, select the “Combined conditions” parameter (Fig. 2.15).

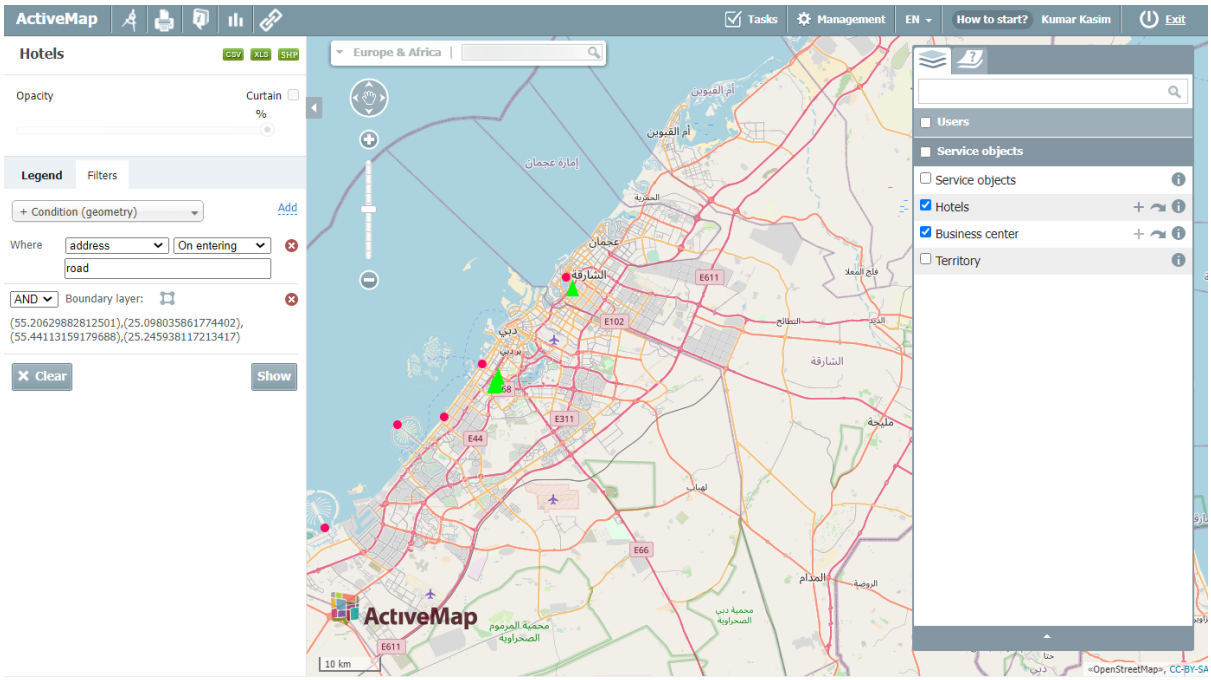


Fig. 2.15: Applying a combined filter by name and geometry

If you select filtering by attribute field, a drop-down list with the names of available attributes, selection type (inclusion, matching) and a field for entering the attribute value will appear. If a refrence table is attached to the attribute field selected for filtering, a field with a drop-down list of possible values will appear instead of the attribute value entry field.

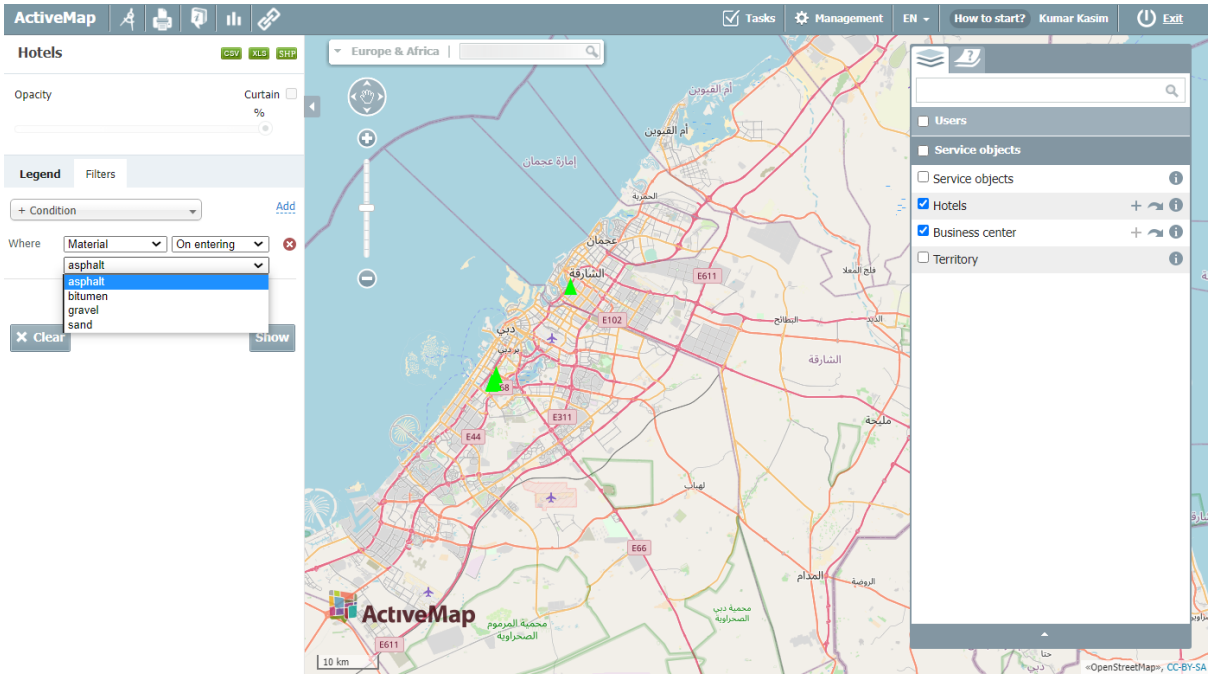


Fig. 2.16: Using a refrence table for filtering objects

The “Metadata” tab contains information about the layer data. If there is no metadata, the tab does not appear in the information panel.

The “Curtain” tool allows to hide part of the active layer in the map window. The vertical curtain is controlled by the cursor. By moving the cursor in the map window (left/right), user limits the display area of the active layer. This feature is useful for visual analysis of differences in images of the same area. To disable the function, uncheck the “Curtain” box (Fig. 2.17).

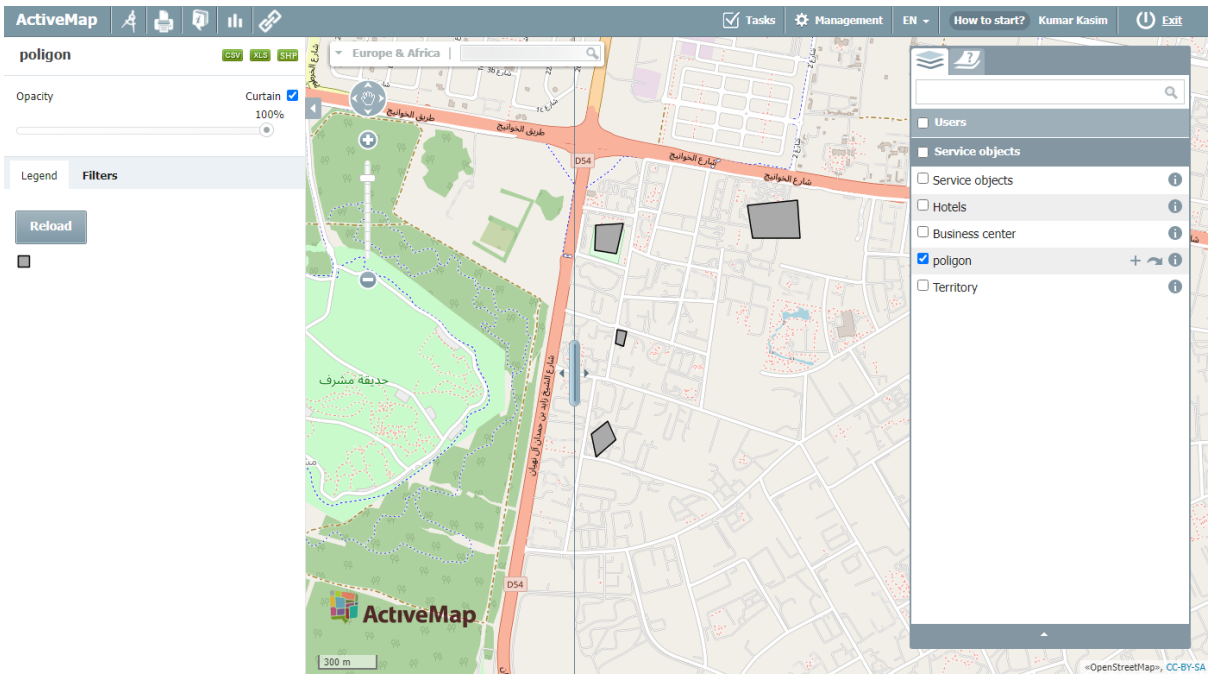


Fig. 2.17: “Curtain” tool

Note: You can use the tab tools only when the layer is enabled.

2.5.1 Displaying layer objects on the map

To the left of the name of each thematic layer there is a layer visibility control field. Check this box to enable layer visibility (Fig. 2.18).

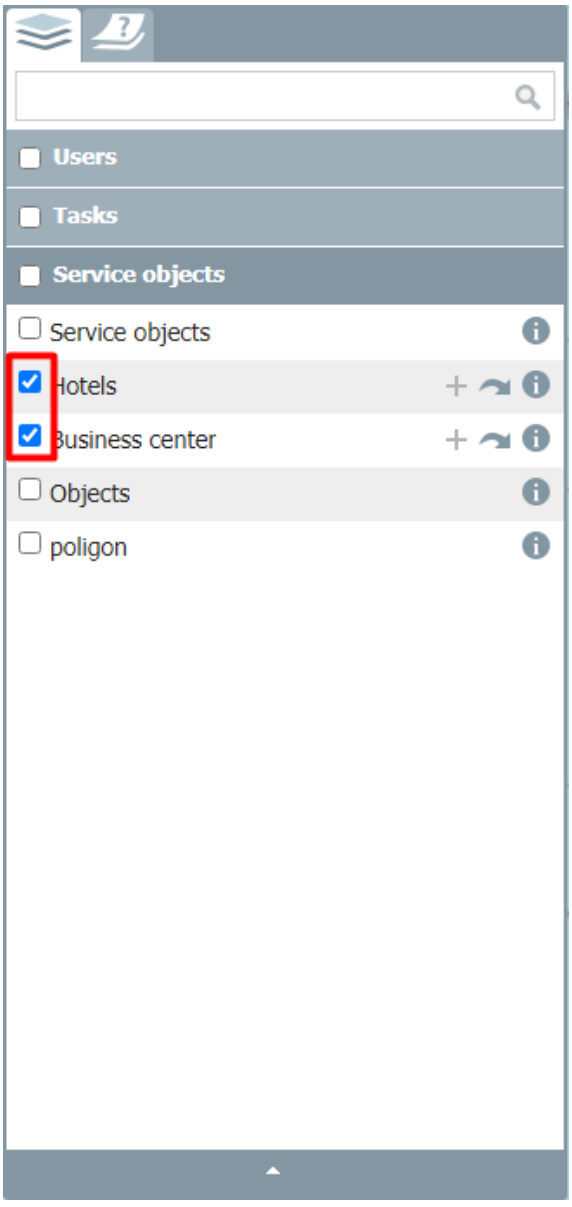


Fig. 2.18: Enabling layer visibility

Objects of the selected layers are displayed on the map. The time of layer loading depends on the number of objects, so the loading may happen with a delay of a few seconds (Fig. 2.19).

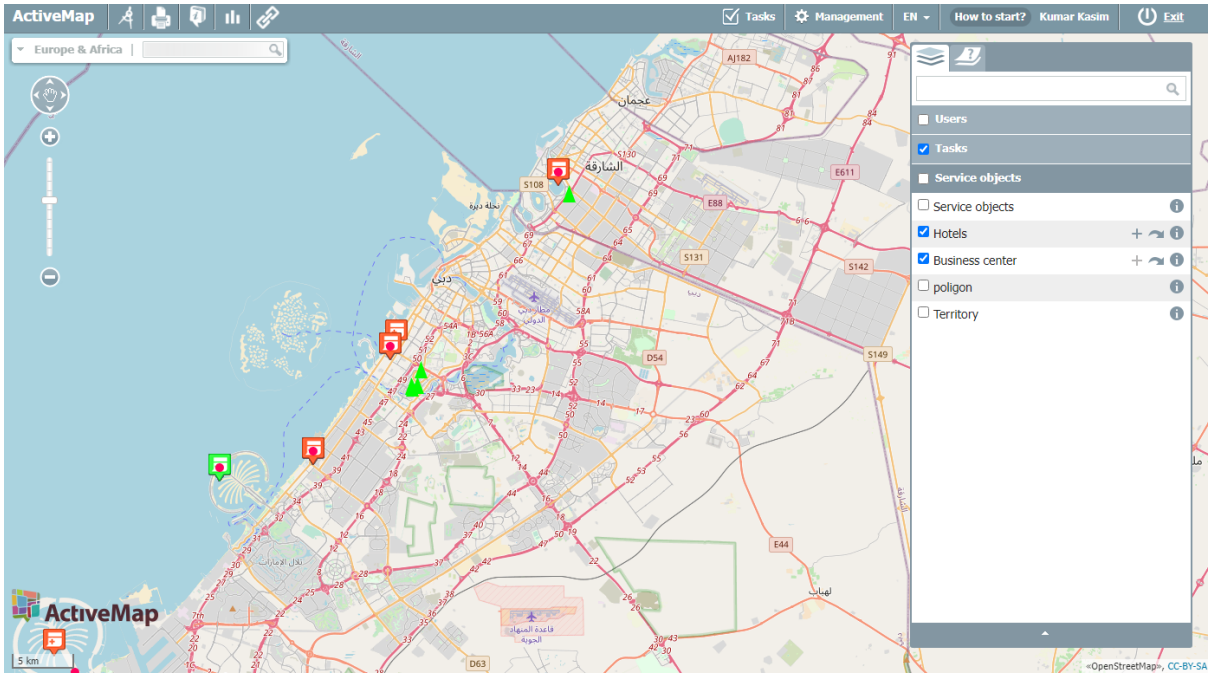


Fig. 2.19: Displaying selected layers on the map

Point, linear and polygonal (area) layer objects can be displayed on the map. If you select more than one layer to display, the layers will be "overlapped" on top of each other (each subsequent selected layer will be displayed on top of the previous one).

You can switch on all the layers of the selected group in one action, by checking the visibility control box of the group. Checkboxes in the visibility control fields of each layer of the selected group will appear automatically (Fig. 2.20).

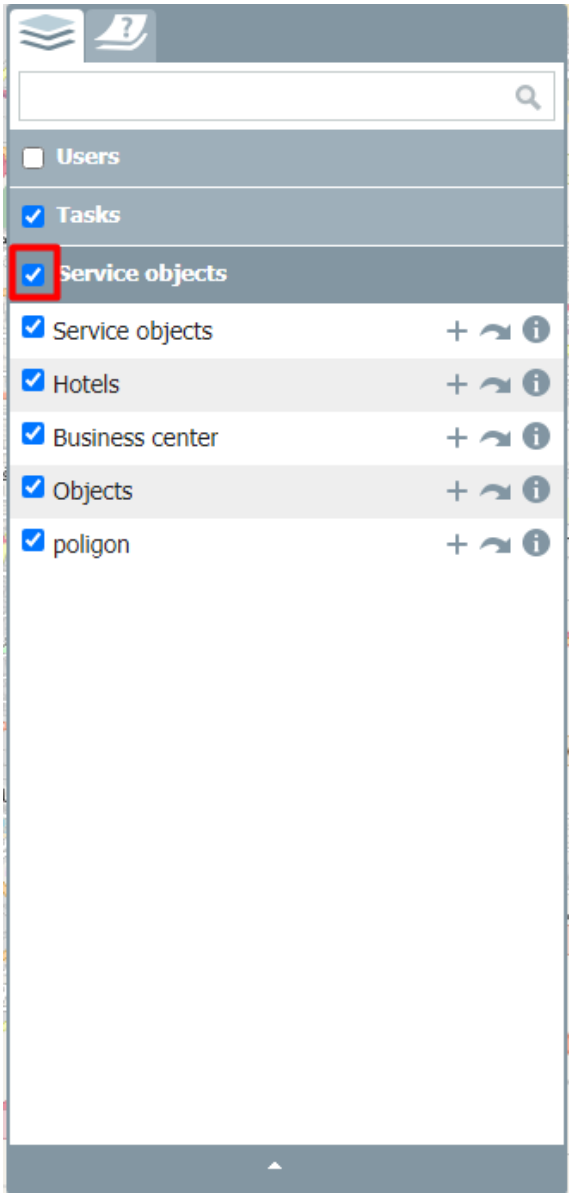


Fig. 2.20: Enable visibility of the layer group

All layers of the selected group will be displayed on the map, where each layer lower in the group layer list will be displayed on top of the layer higher in the list.

Unchecking each tick in the layer visibility checkbox will hide the corresponding layer on the map. Removing a tick in the visibility control field of the group will hide the whole group of layers.

2.5.2 Obtaining attribute information for layer objects

After all objects of the selected thematic layer are displayed on the map, you can get additional attributive information about each object. To do this, select the object on the map by clicking once. A window with attribute information for the object will appear. Clicking on the “Details” in the left part of the window will open a sidebar with information on the object (Fig. 2.21).

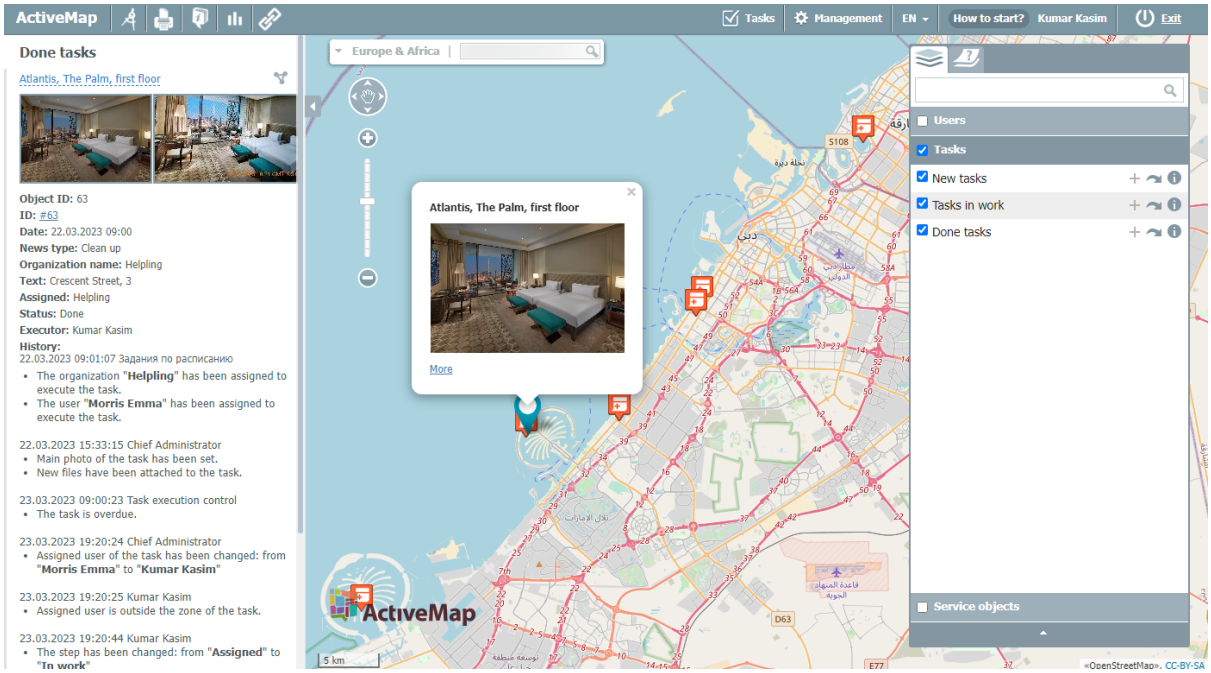


Fig. 2.21: Window and sidebar with information about the object

2.5.3 Adding an object to a layer

To add an object to a map layer, click the + button on the layer control panel (Fig. 2.22).

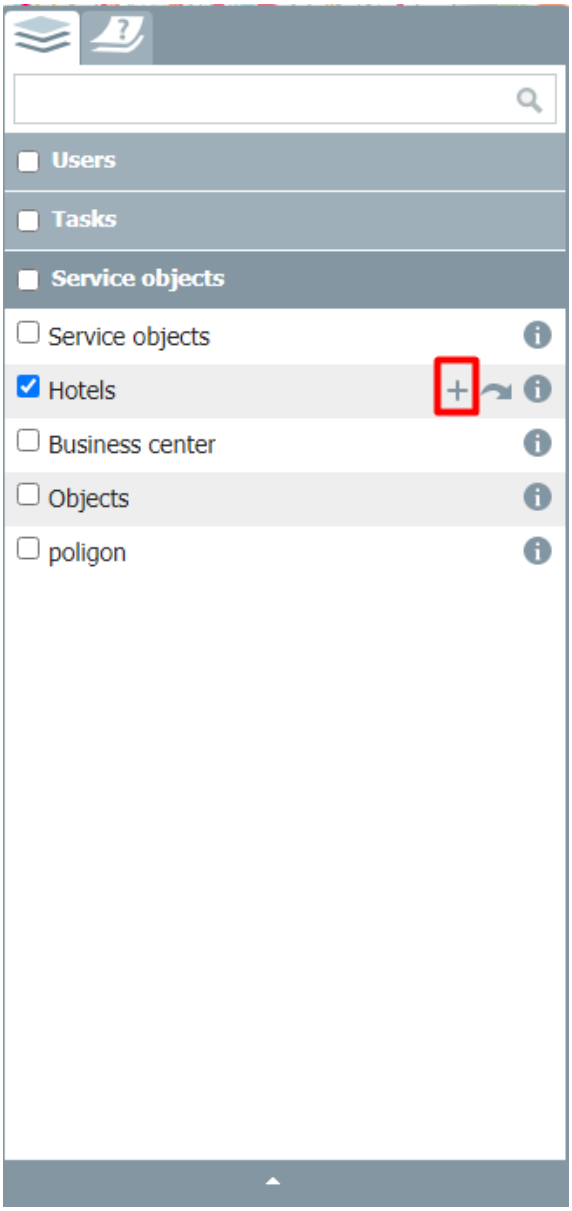


Fig. 2.22: Button for adding an object on the layers panel

The “New object” window opens (Fig. 2.23), in which the type of geometry of the added object is specified. To create a point object, click once with the left mouse button on the object’s location on the map. To create a linear or polygonal object, click once with the left mouse button at the line or polygon edge nodes. After the object geometry is created, fill in the attributive fields, attach photos or other files, if needed, and press the “Add” button.

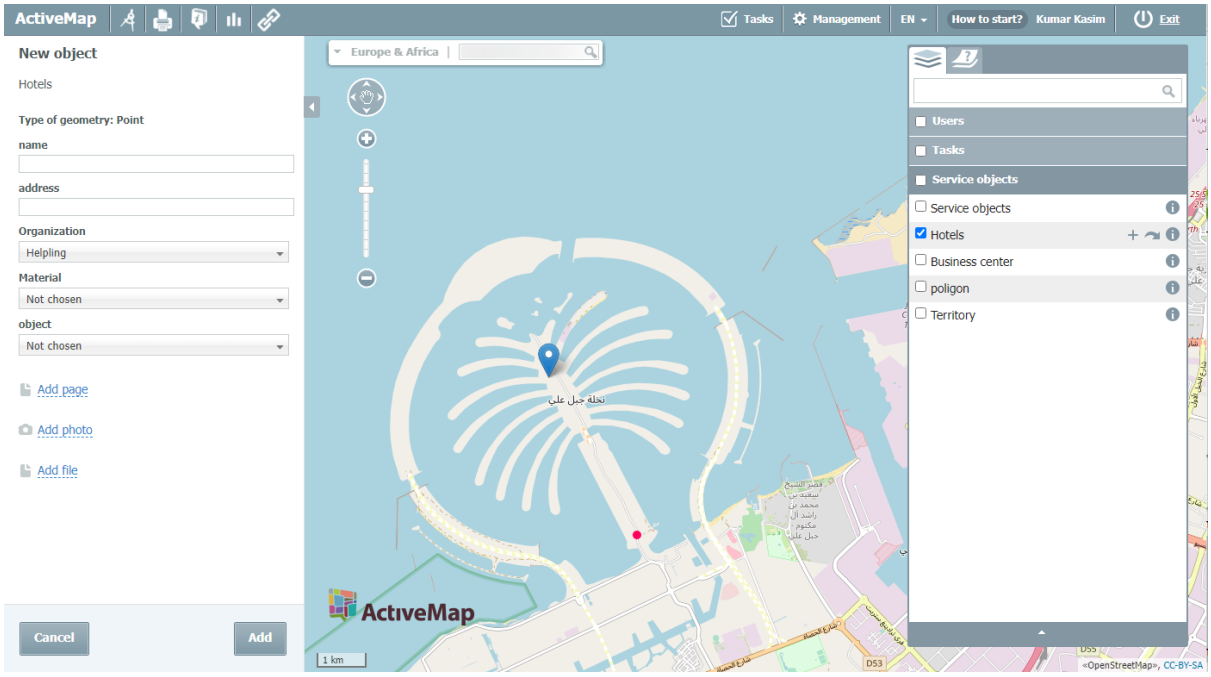


Fig. 2.23: Adding a new point object

An information message about the successful addition of the object will appear (Fig. 2.24), the created object will be displayed on the map.

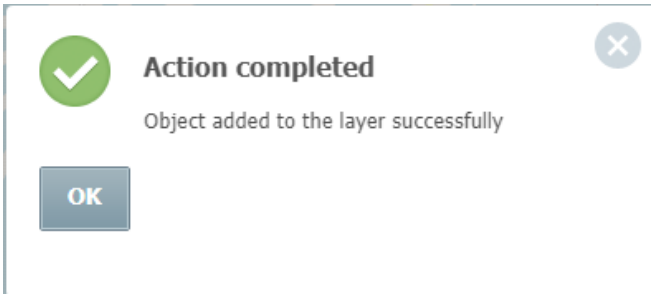


Fig. 2.24: Message about the successful addition of the object

2.5.4 Editing and deleting a layer object

To edit layer objects, open the object window by selecting the object on the map and clicking on the “Details” button, then click the  button. In the opened panel, you can change the information in the attribute fields, add photos or other types of files. After making changes, click “Save”. An information message about the successful object modification will appear (Fig. 2.25).

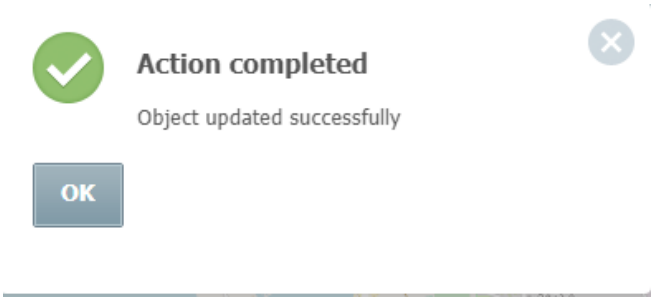


Fig. 2.25: Message about the successful modification of the object

When pressing the button, the selected object will be removed from the map. An information message about the successful deletion of the object will appear (Fig. 2.26).

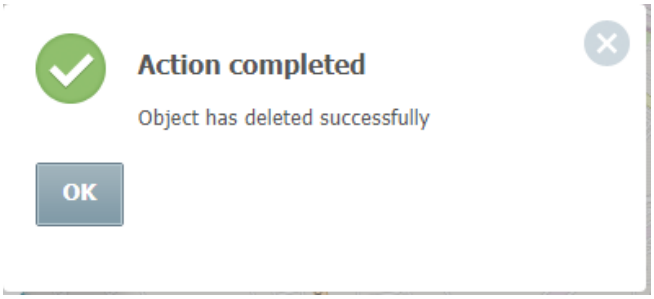


Fig. 2.26: Message about the successful deletion of the object

2.6 Toolbar

The Program toolbar consists of the following buttons (Fig. 2.27):

- "Measure the distance",
- "Map print",
- "List of objects of area",
- "Reports",
- "Online Statistics" (displayed if enabled in the settings),
- "Fixed link".

Fig. 2.27: Toolbar

 - "Measure the distance" button is used to measure distances between two or more objects on the map.

To measure the distance, press the  button, move the cursor to the measurement start point and click the left mouse button, move the cursor to another point and click again left mouse button. If you want to measure the distance between three and more objects, you have to sequentially specify all the vertices. To finish entering the vertices, double-click the left mouse button. After that, vertex entry will stop, the last vertex will be removed from the map, and the measured distance will be displayed on the screen (Fig. 2.28).

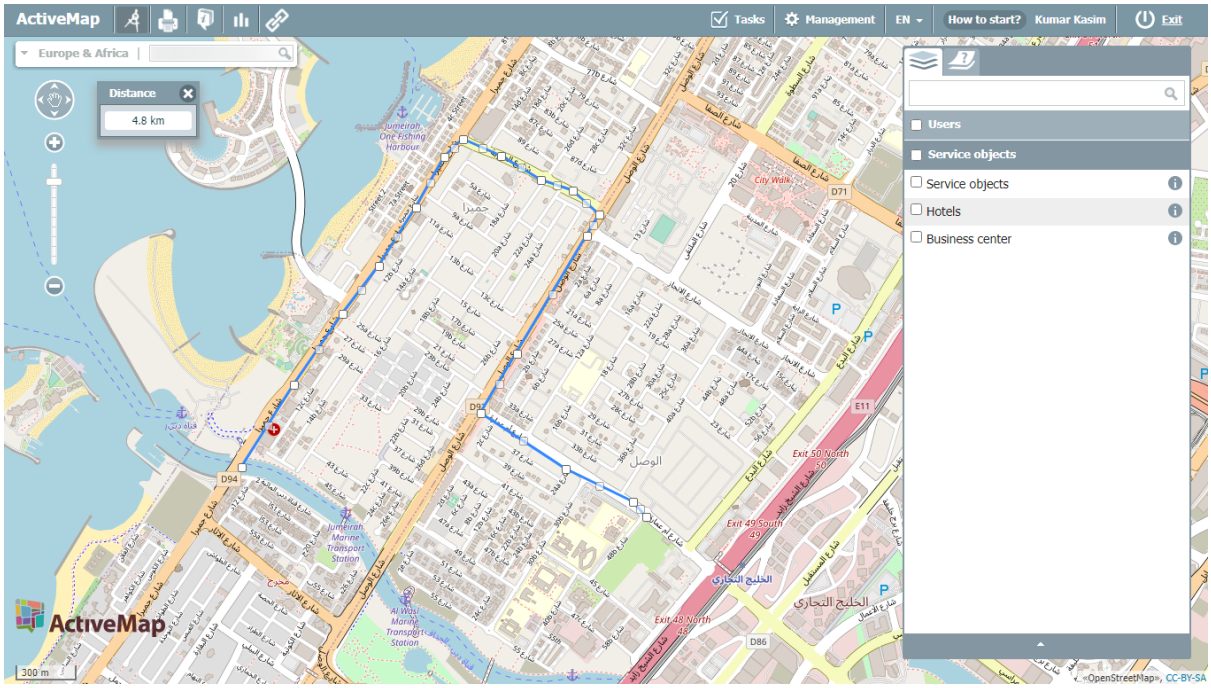


Fig. 2.28: Measuring distances on the map.

Clicking the  button again allows to exit the measurement mode. All lines connecting selected objects will automatically disappear from the map.

 - “Map print” button is used to print the visible area of the map.

Clicking on this button opens a new window where you can select the scale and position of the map. Also you can add a comment, which will be saved to the printed version (Fig. 2.29).

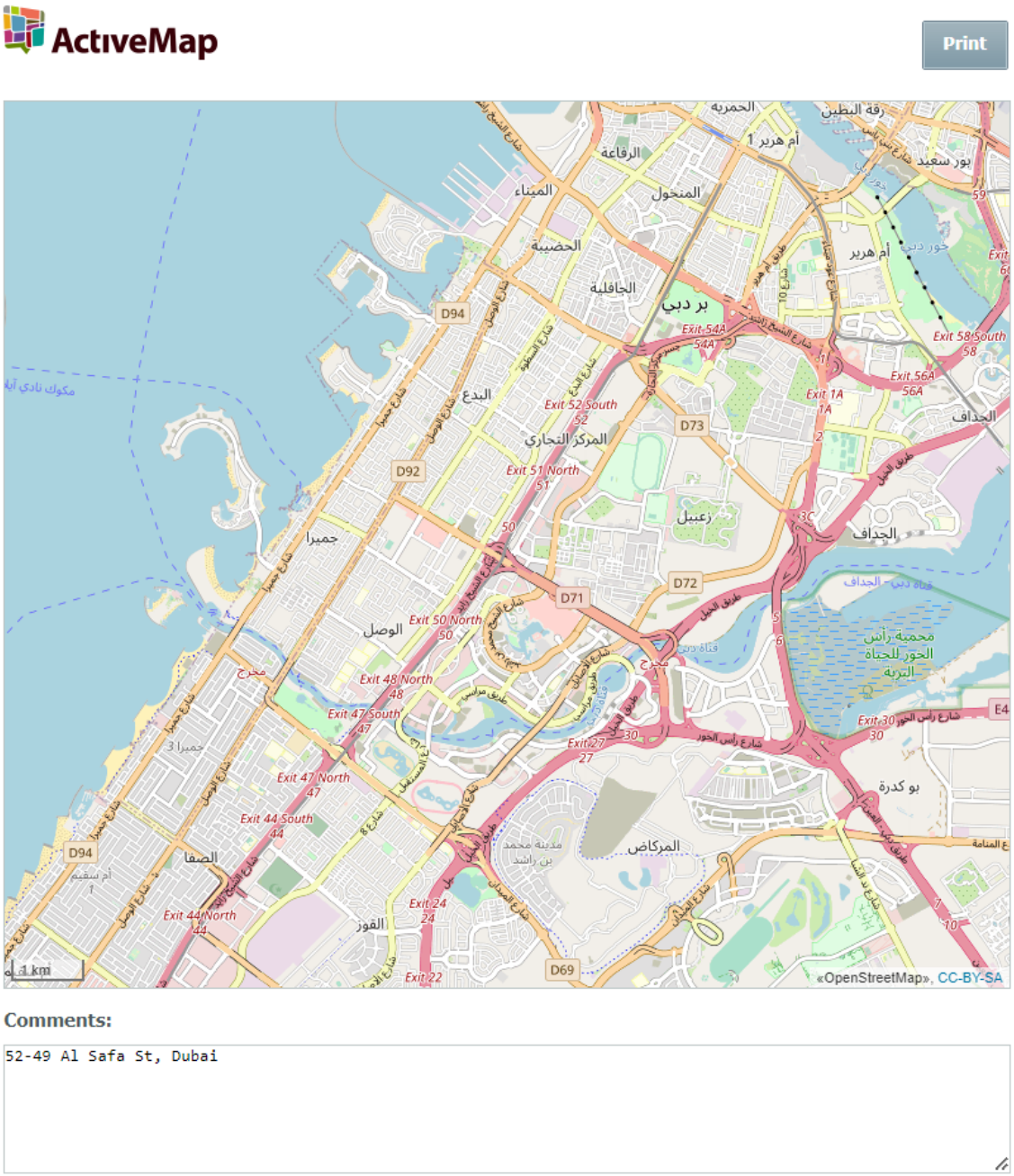


Fig. 2.29: Visible map area window for printing

If “Measure the distance” function was enabled during map printing, the route line will also be saved in the printed version.

After clicking the “Print” button, the print wizard window will appear (Fig. 2.30), where you need to select one of the installed printers, enter number of copies, select page orientation, page range for printing and color mode (color or black-and-white).

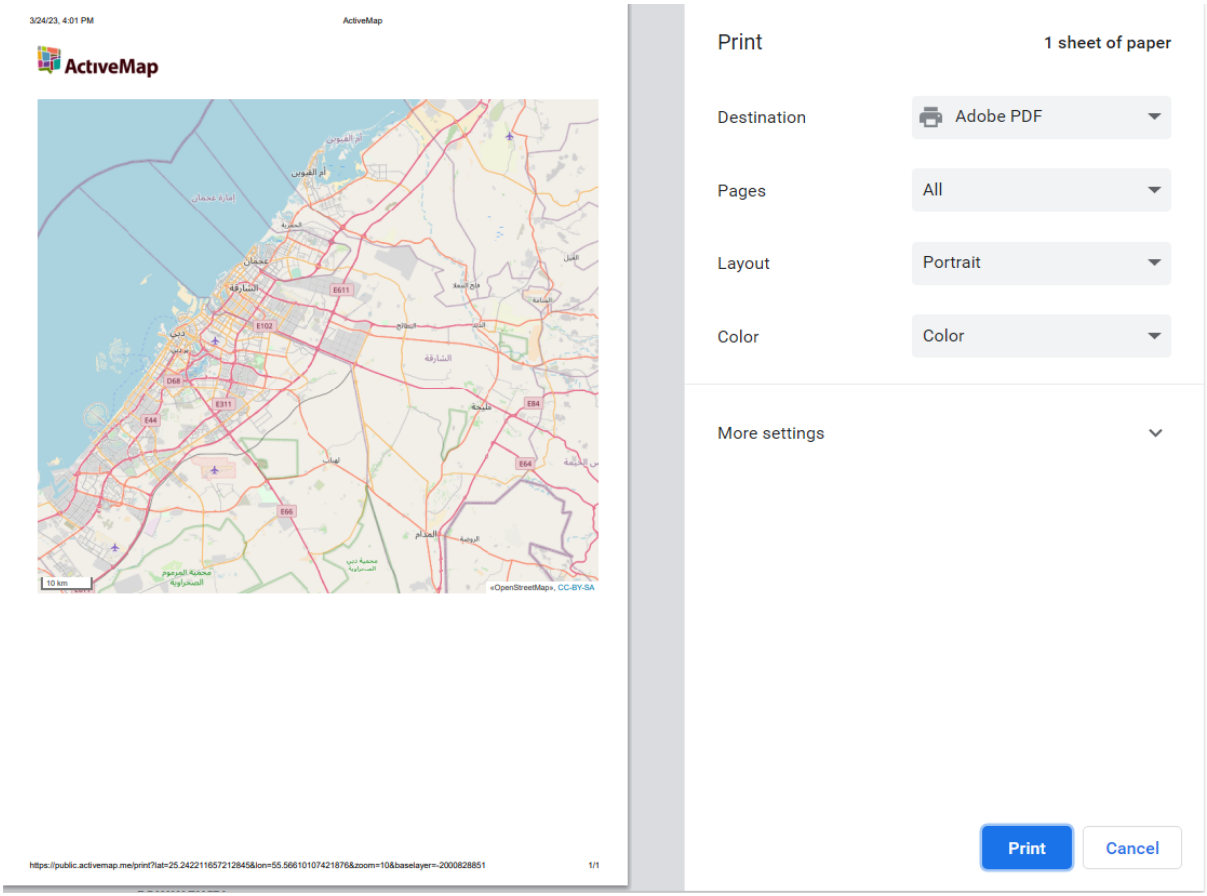


Fig. 2.30: Print wizard window

Additional settings are also available by clicking on “All settings” string: paper size, scale, number of pages on one sheet, document margins, “Print headers” and “Print background” flags.

Print settings can also be made in the standard Windows print window, which appears when you click “Print using system dialog”. After clicking on “Print”, the printer will print the map as it appeared on the screen at the time of the print wizard call.

 — “List of objects in area” button allows to get detailed information about the selected objects.

First, you should tick the layers of interest in the Layer control panel. Then press the  button and choose the selection type: rectangle or arbitrary polygon. To select the area of interest as a rectangle, press the left mouse button and drag to the side. A window with a list of objects, located on the selected area will open on the left side of the page (Fig. 2.31). You can find information about each object in the list by clicking on its name.

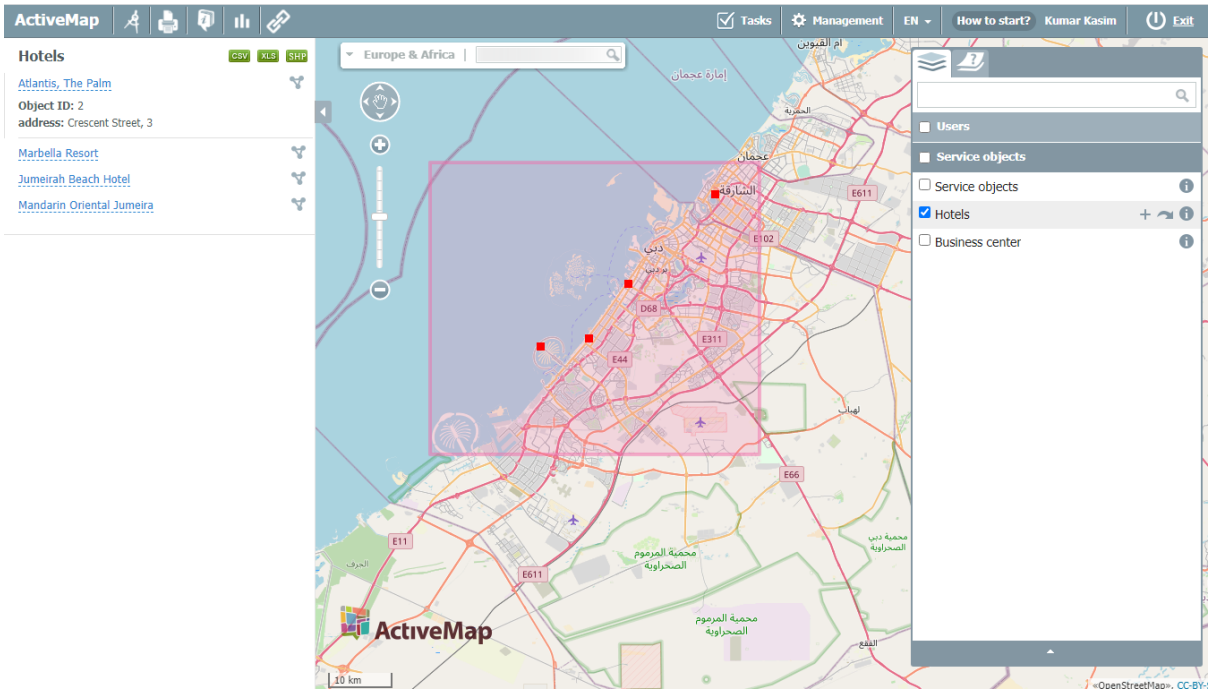


Fig. 2.31: List of objects in the selected rectangular area

To select an arbitrary polygon, mark its vertices on the map. The vertices can be moved. When you move in the middle between neighboring vertices, an additional vertex appears (Fig. 2.32).

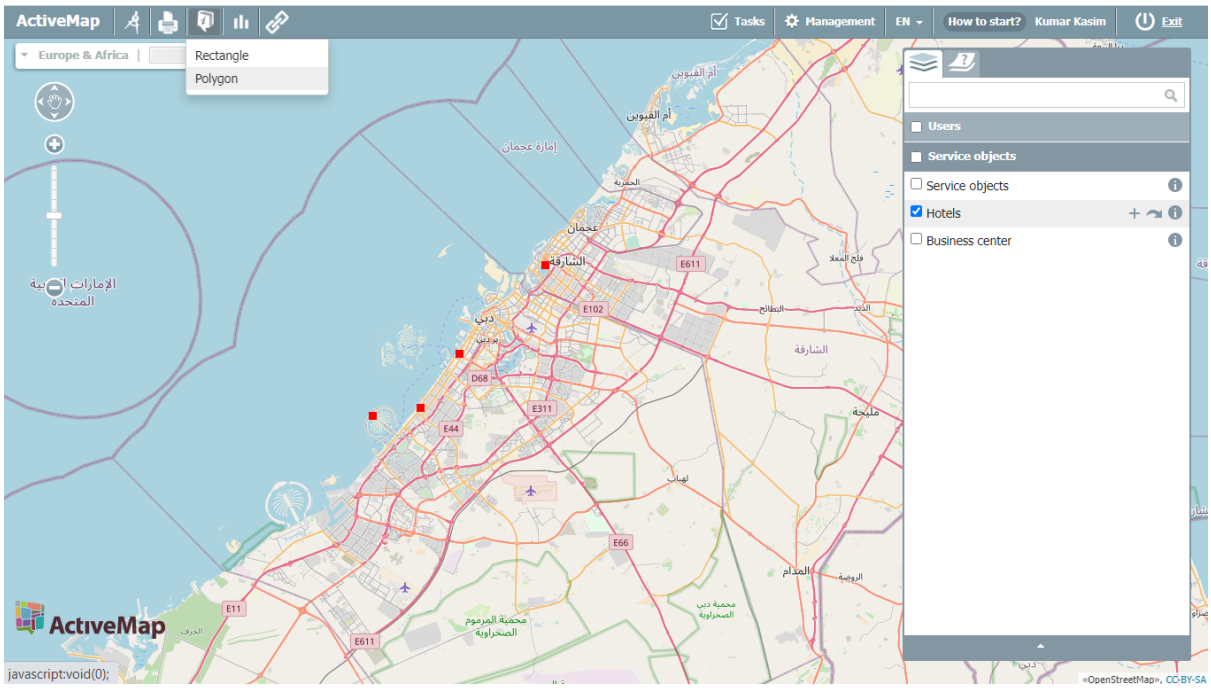


Fig. 2.32: The process of selecting an arbitrary polygon

After all vertices are marked, click on the  on the right side of selection type “Polygon”. A window with a list of objects (Fig. 2.33) will open on the left side of the page.

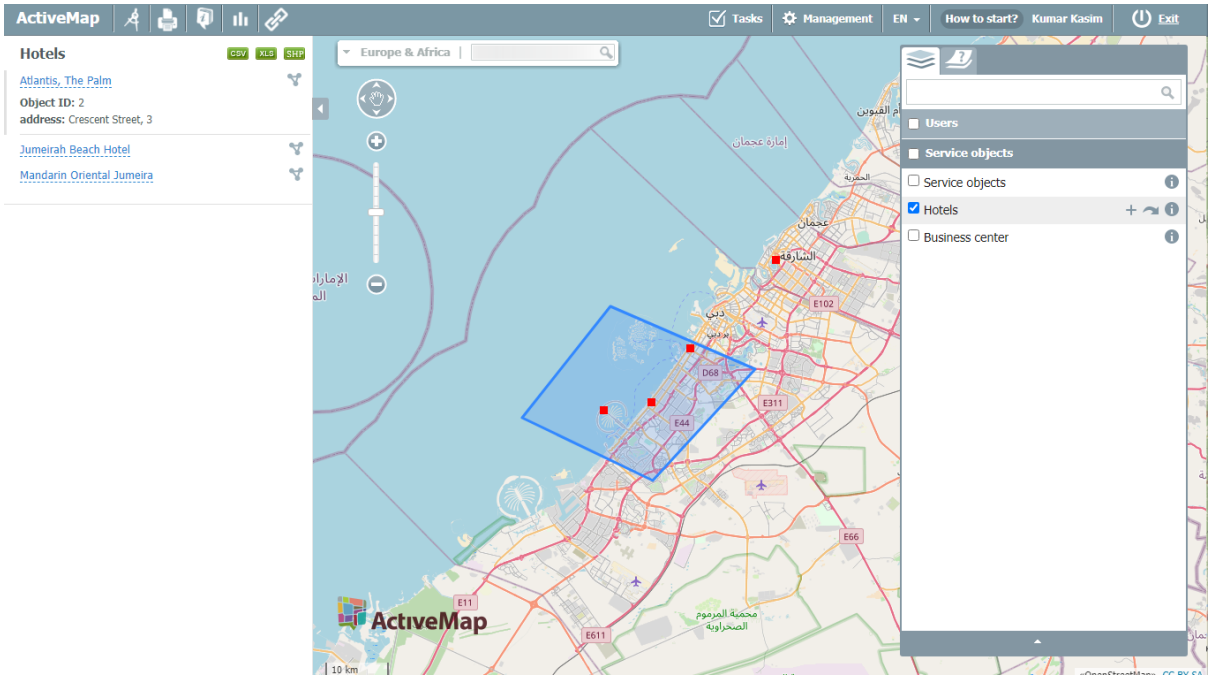


Fig. 2.33: List of objects in the selected polygon

Layer data can be exported in xls, csv, and shp formats using the buttons above the list of objects CSV XLS SHP. Information about the exported data will appear above the search results (Fig. 2.34), which can be saved or opened in an external program by clicking on the export name string.

Fig. 2.34: Information about exported data

 - "Reports" button allows to generate reports on certain events for a specific period of time.

When clicking on the  button, a list of report parameters will open (Fig. 2.35). Selecting the required ones you can save the report in any format (PDF/Excel/Word/RTF).

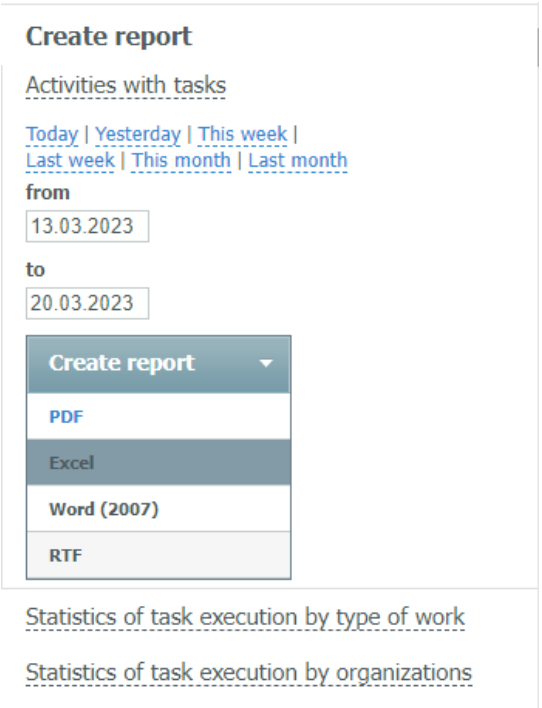


Fig. 2.35: The panel of ready-made reports

This tool can only be used by authorized users with the appropriate rights, “Reports” are not available to unauthorized users.

 - “Fixed link” tool allows to create a URL link, so that you can go through it to the system, as well as HTML code to add to a website.

Selecting this tool automatically opens a window with URL link that saves the map zoom as well as all the layers that enabled at the moment.

When creating HTML code to add to a website, you can select the following parameters: map size, width and height, and also decide whether to display control elements of basic layers and map controls (Fig. 2.36).

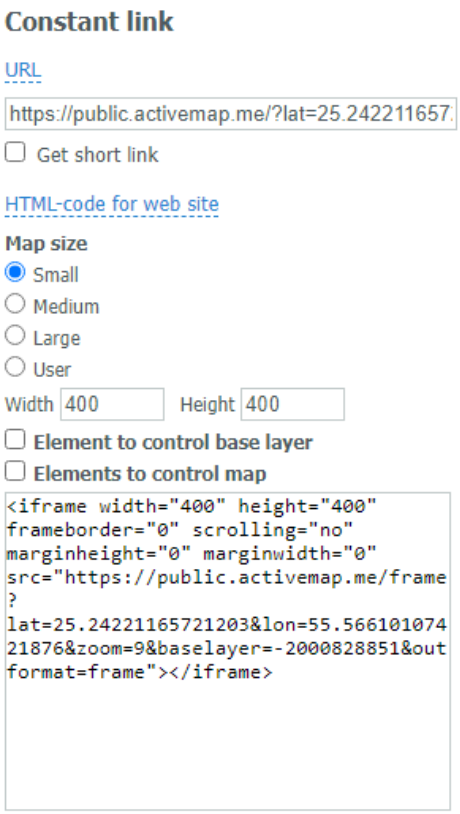


Fig. 2.36: Fixed link settings

If you have the appropriate rights and settings, there may be an additional “Online statistics” button on the toolbar.

 - “Online statistics” button opens the statistics module and allows to view current data in real time. The display of the button on the toolbar is regulated by the administrator in the program settings (Settings -> MapSurfer -> Modules -> Statistics module -> Whether to show the button with statistics).

The Online Statistics module is a report that is updated at a specified interval based on collected data on user monitoring and online tasks (Fig. 2.37).

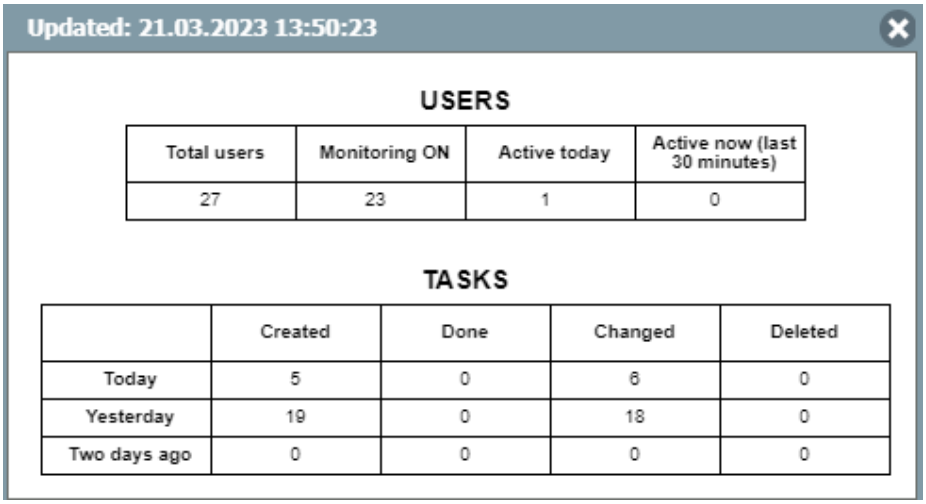


Fig. 2.37: Online statistics module

2.7 User panel

User panel includes the following elements (Fig. 2.38):

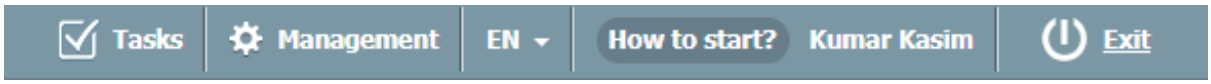


Fig. 2.38: User panel

- “Task module” - allows to create operational and scheduled tasks in the system.
- “Management module” - allows to get information and manage organizations, users, tasks, layers, layer groups and their parameters within the user access rights.
- “Interface language” - responsible for switching the interface to one of the available languages.
- “How to start?” button - directs to the start page, where you can download installers and manuals for the main products of the ActiveMap complex .
- “User name” - displays the name of the current user.
- “Exit” button - terminates the session as a registered user of the system (allows to log out from the user account).

2.7.1 Tasks module

Tasks module allows to work with contracts, create operational and planned tasks in the system.

Operational tasks are created to solve current issues. Planned (scheduled) tasks are created on a date and time specified in the schedule according to a given template.

Tasks can be created within the contracts, concluded with an organization, as well as independently of them. The ability to view, create and edit contracts and

tasks depends on the user's role in the system. User roles are defined by the Organization Administrator or Cluster Administrator.

To go to the tasks module, click on "Tasks" (Fig. 2.39) on the user panel on the main page of the geoportal.

Fig. 2.39: Accessing the task module

Contracts

Contracts in ActiveMap

Contract is an agreement for the provision of services concluded with an organization, under which work on a task is performed. Contracts can be created, edited, and deleted by users with Administrator or Cluster Administrator roles. Contracts operate within the cluster. The cluster is selected automatically. When creating, the cluster of the customer organization is used. In another cluster, this contract will not be available to users. 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).

A contract may include a list of service objects and types of work. After the start date of the contract, it is impossible to change this date, customer and performer organizations, and also the end date after the expiration of the contract.

Operational and scheduled tasks can be created within a contract. Operational and scheduled tasks can only be created within one contract, you cannot add two contracts. But multiple tasks and schedules can be attached to one contract. If necessary, you can delete a previously selected contract from the task and add a new one. If you delete a contract from the system, the operational tasks created under it and the tasks created under the schedule are preserved (the contract name is displayed in the task), the schedule itself is deleted.

List of contracts

To access the window with contracts in the "Tasks" module, click on "Contracts" on the top panel of the page. In the opened window (Fig. 2.40), the entire list of contracts entered into the system (for the Chief Administrator and Chief Inspector) or the cluster contract list (for the Cluster Administrator and Cluster Inspector), the organization contract list (for the Organization Administrator and Organization Inspector), the contract list for available tasks for all other users is presented.

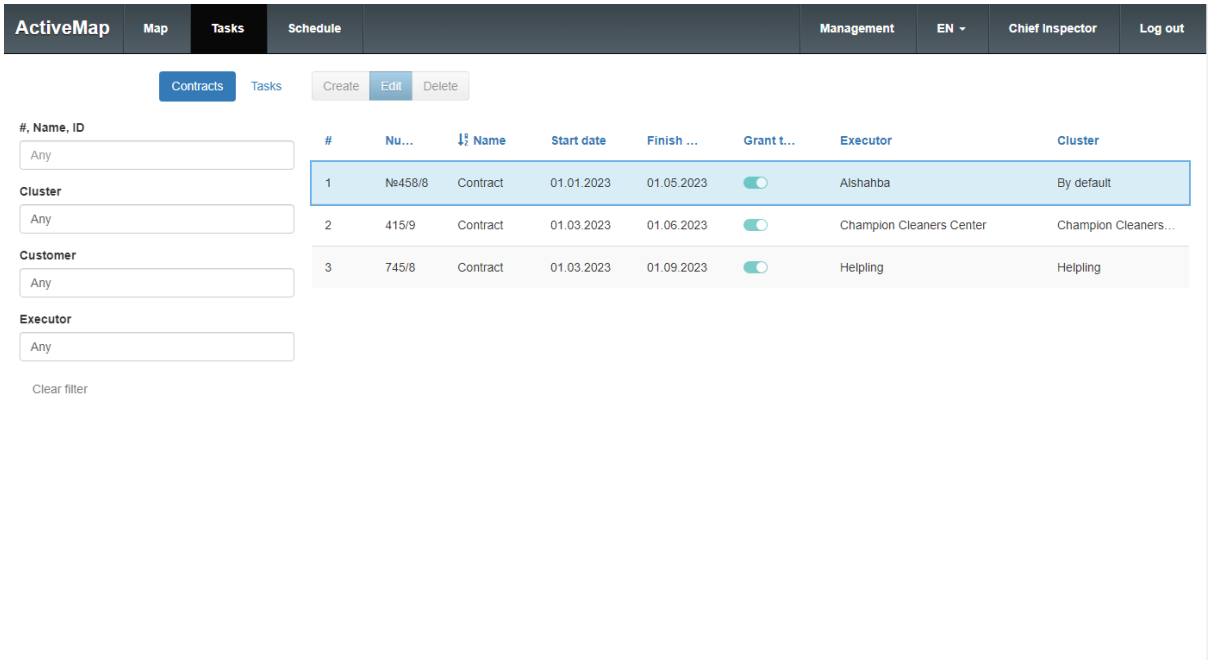


Fig. 2.40: List of contracts

The contracts window has a search by contract number, name and ID. You can also set up filters by attributes:

- Cluster,
- Customer,
- Executor.

The list of contracts is presented in the form of a table, which includes all the basic information on the contract. For convenience, there is sorting in two directions, which works by clicking on the attribute name.

Tasks

To go to the window with the list of tasks, click on “Tasks” on the top panel of the page. In the opened window you can see all the tasks created at the moment (Fig. 2.41). Tasks will be available to the user, taking into account his/her rights in the system.

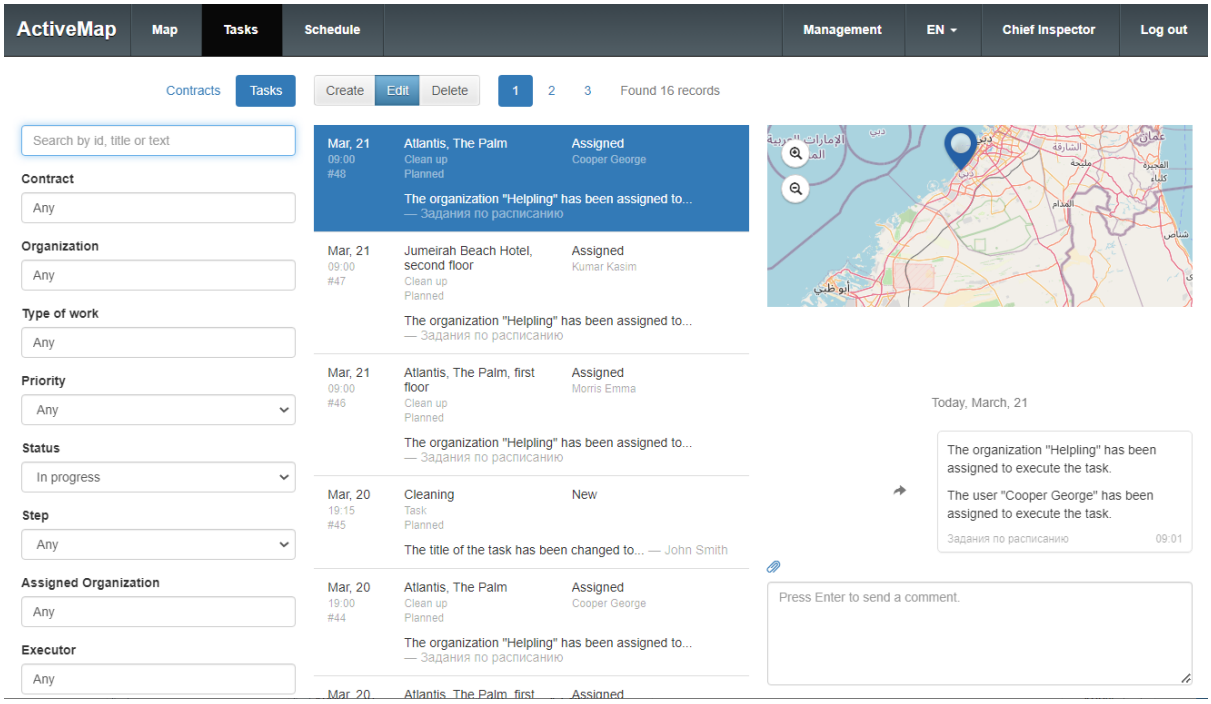


Fig. 2.41: List of tasks available to the user

The filter area located to the left of the task list is intended for searching in the general list using various parameters.

The following filtering parameters are used:

- “Search by Id, title or text”,
- “Contract” (if you have access),
- “Organization”,
- “Type of work”,
- “Priority”,
- “Status”,
- “Step”,
- “Assigned organization”,
- “Executor”.

The context search field allows to find a task by number, title, or description. To search for a task, simply enter part of the number, name, or description. To filter tasks by stage, type of work, step, priority, organization, performing organization, or performer, you need to select values from the dropdown list. The values of these parameters are customized for the individual characteristics of the organization’s activities. After entering and selecting all filtering parameters, the list will display tasks that meet the specified criteria.

Creating an operational task

To create a new operational task, click “Create” and fill in the form (Fig. 2.42).

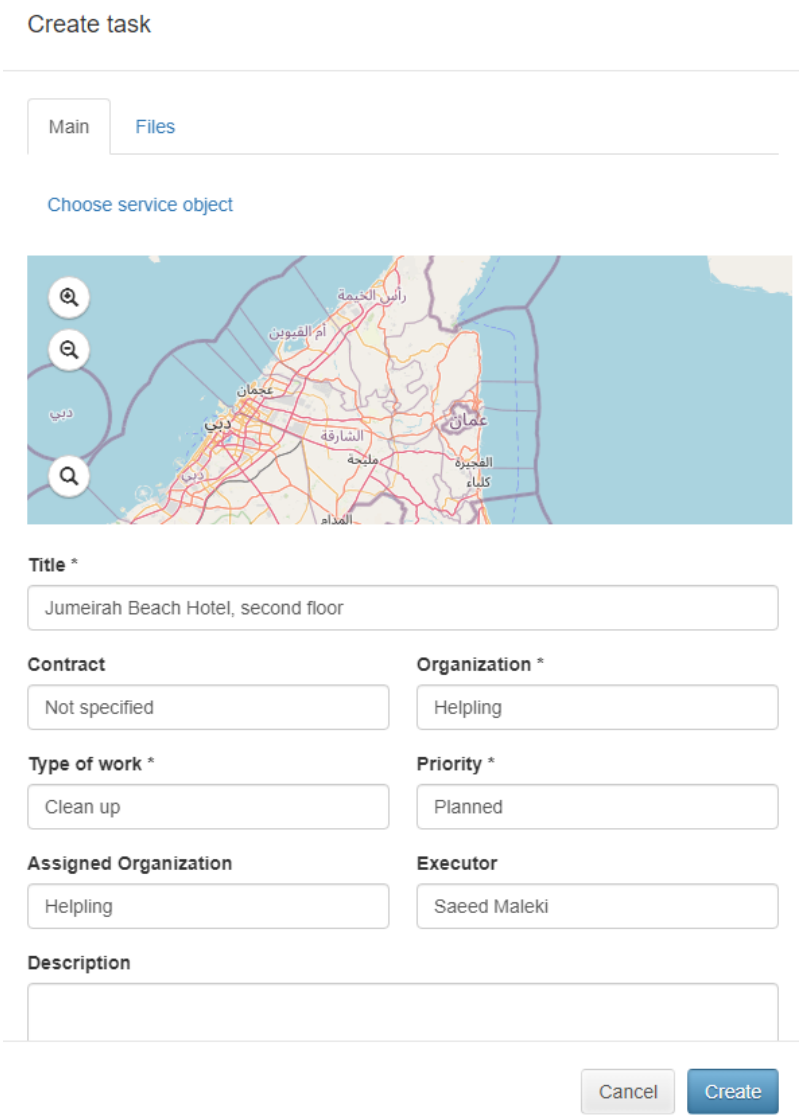


Fig. 2.42: New task creating window

The “Main” tab contains the following items:

- “Map” - marking the location of the task object on the map (you can select from service objects, find an address in the search field or mark a point on the map);
- “Title” - a brief description of the problem/goal of the task;
- “Contract” - the contract under which the work is carried out for the task;
- “Organization” - the organization on whose behalf the task will be created (this field is available to Chief Administrator and Chief Inspector);
- “Type of work” - type of work for the task;

- “Priority” - priority of work (you can choose from the list: planned, unplanned, additional, etc.);
- “Assigned organization” - the organization to which the task will be assigned for execution (when selecting a contract, the value specified in the contract will be automatically filled in);
- “Executor” - the user responsible for performing the task;
- “Description” - a detailed description of the task;
- “Until” - the date and time by which the task must be completed;
- Custom fields - additional fields with different formats that were previously created and linked to a specific type of work.

In the “Files” tab you can attach files of different formats (Fig. 2.43). These can be photos, videos, audio recordings, text files.

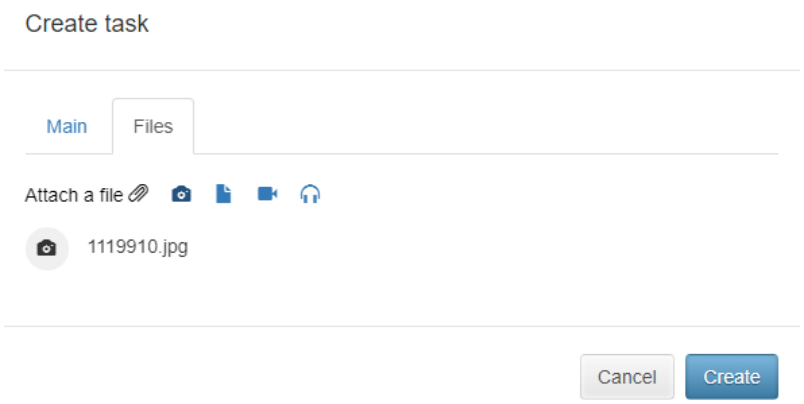


Fig. 2.43: Adding files to a new task

Editing a task

The ability to edit task fields depends on the role of the user. To edit a task, select the desired task and click “Edit” in the upper part of the window or double-click on the task. After that the task opens in the edit mode, where the user can fill in/modify the available fields (Fig. 2.44).

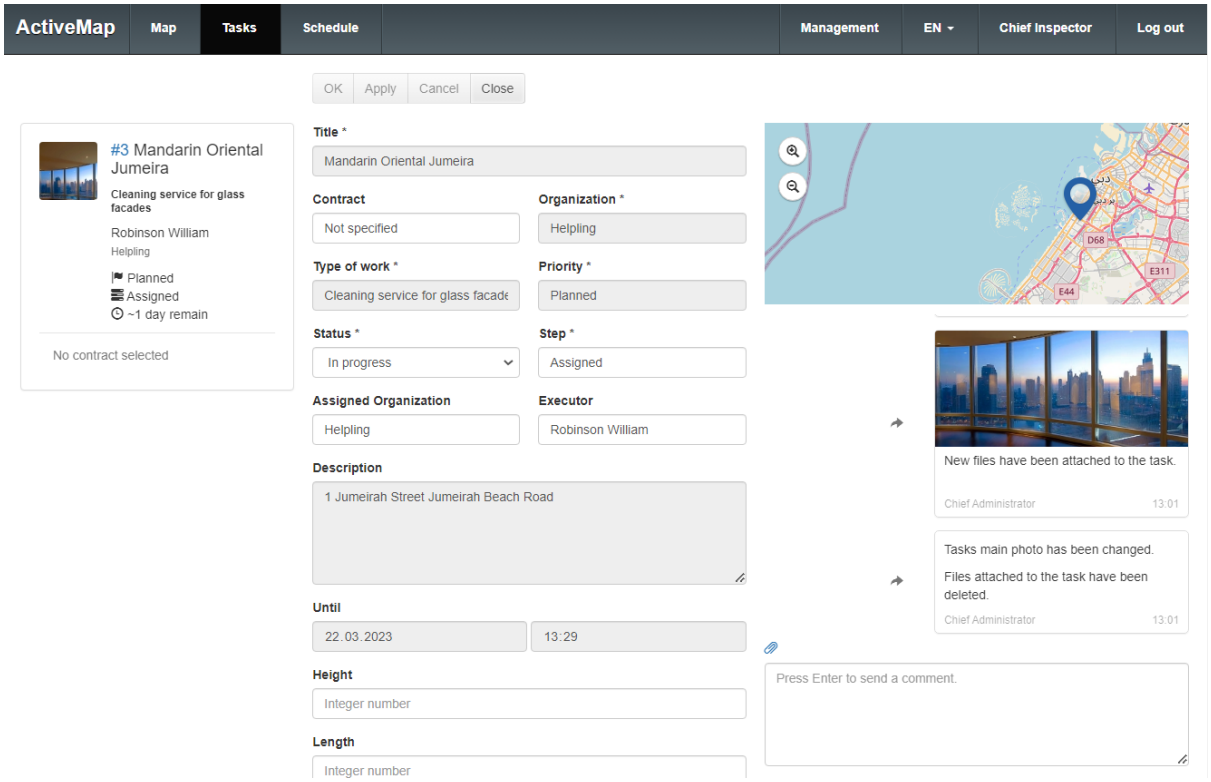


Fig. 2.44: Task editing window

After making all the changes, click one of the buttons located at the top of the editing window:

- “OK” - save changes and go to the list of tasks;
- “Apply” - save changes without closing the editing window;
- “Cancel” - cancel all changes made before saving;
- “Close” - close the editing window (changes will not be saved if they are not saved before closing).

If the task is not editable, only “Close” button will be active.

Deleting a task

The ability to manage tasks depends on the user's role. To delete an existing task, select it and click on "Delete" at the top of the window. Confirm the action in the pop-up information window (Fig. 2.45).

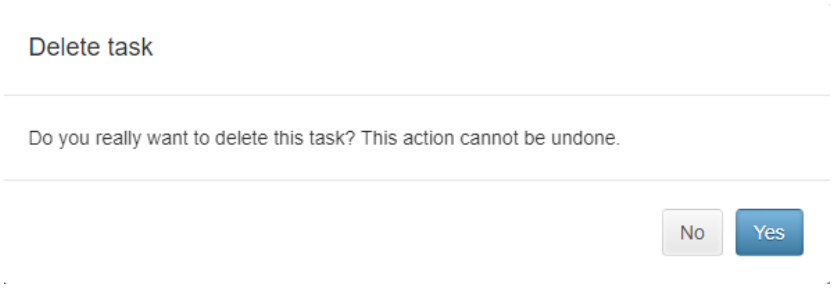


Fig. 2.45: Deleting a task

If the user does not have access to deleting tasks, the message "No access rights" will appear.

Schedules

Schedules allow you to automatically generate tasks based on templates (typical tasks) at a certain time with the required frequency. To go to the section with schedules and task templates, click on "Schedule" on the top panel of the page. The schedule window with a calendar will open (Fig. 2.46).

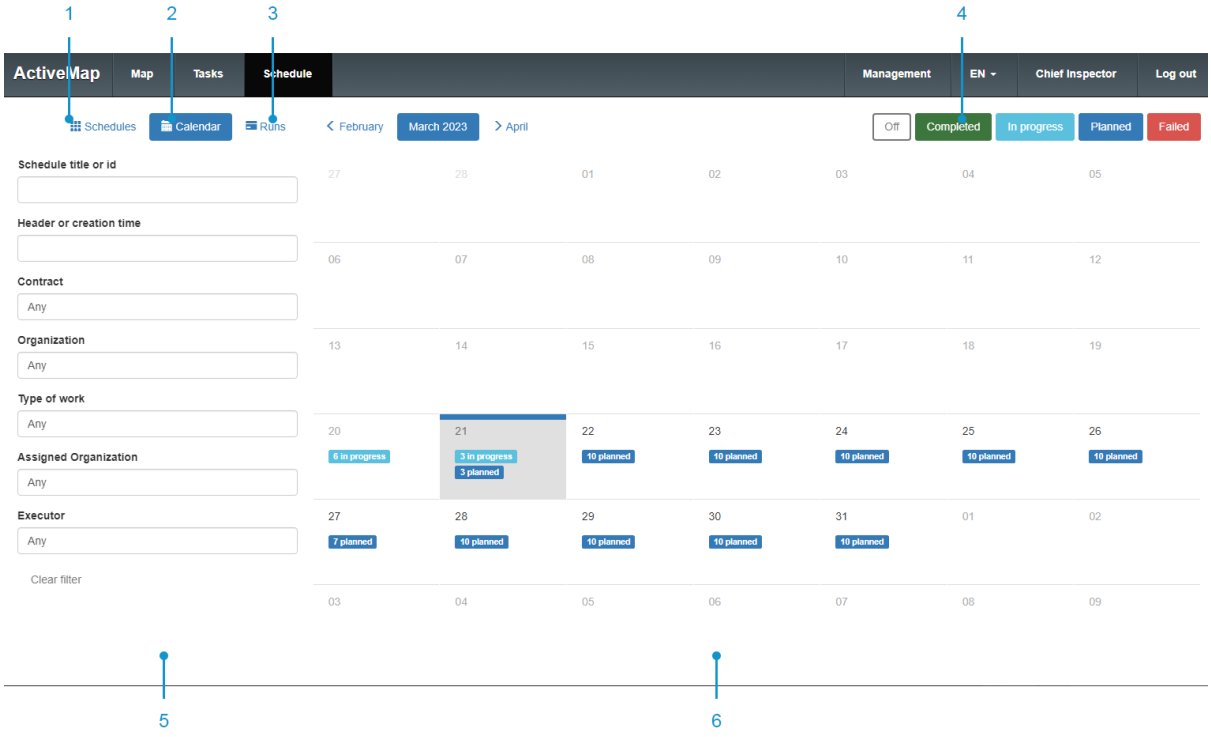


Fig. 2.46: Schedule window with calendar

The window contains the following elements:

1. “Schedules” button - switching to the cards of all available schedules.
2. “Calendar” button - switching to the calendar with schedule launches (the calendar is opened by default when you go to the schedules section).
3. “Launches” button - switching to the cards of schedules with launches for the selected date.
4. Legend of the status of creating tasks with the ability to turn on/off.
5. Filter panel.
6. Calendar with marked task status.

When you click on the “Schedules” button, you switch to the cards of all available schedules. The schedule card displays its name, organization, cluster, contract, launch (task creation) time, a button to go to the list of templates attached to the schedule (Fig. 2.47).

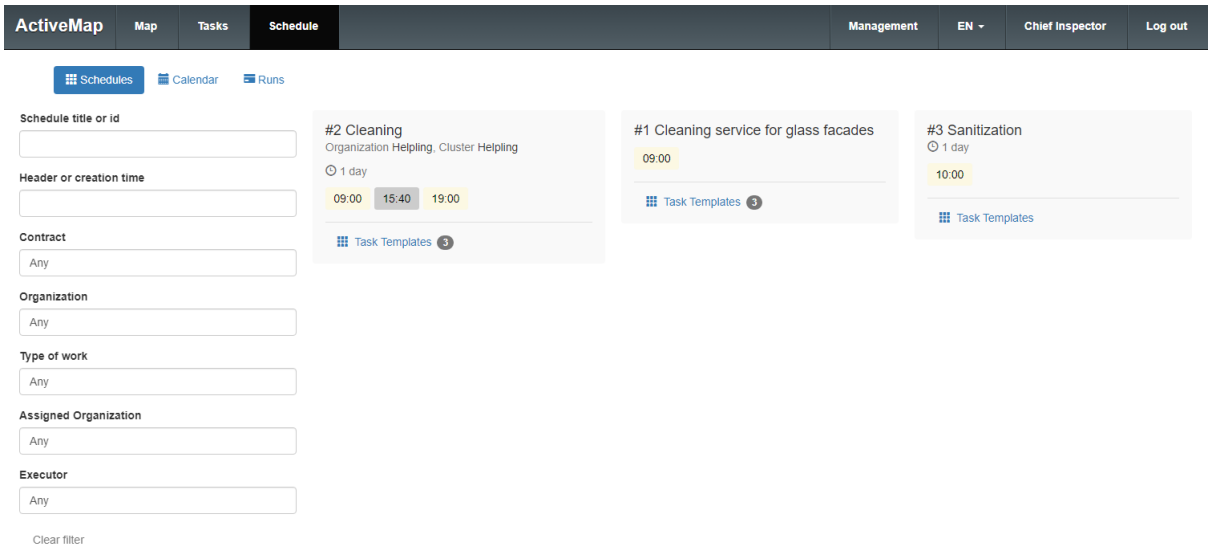


Fig. 2.47: Schedule cards

Clicking on the “Calendar” button takes you to the calendar with schedule launches. The calendar with the current month is opened by default when switching to the schedules section (Fig. 2.46). The calendar cells display the number of tasks created by the schedule for the day. Tasks are grouped and color coded by statuses. The colors of the statuses are displayed in the legend in the upper right part of the window (enabled, completed, in progress, planned, not created). Click on a status name to enable/disable displaying of the corresponding tasks in the calendar. Double-clicking on a date in the calendar opens the launches window for that day.

You can go to the same window by clicking on the “Launches” button. In the right part of the window there is a smaller version of the calendar with task status marks (Fig. 2.48).

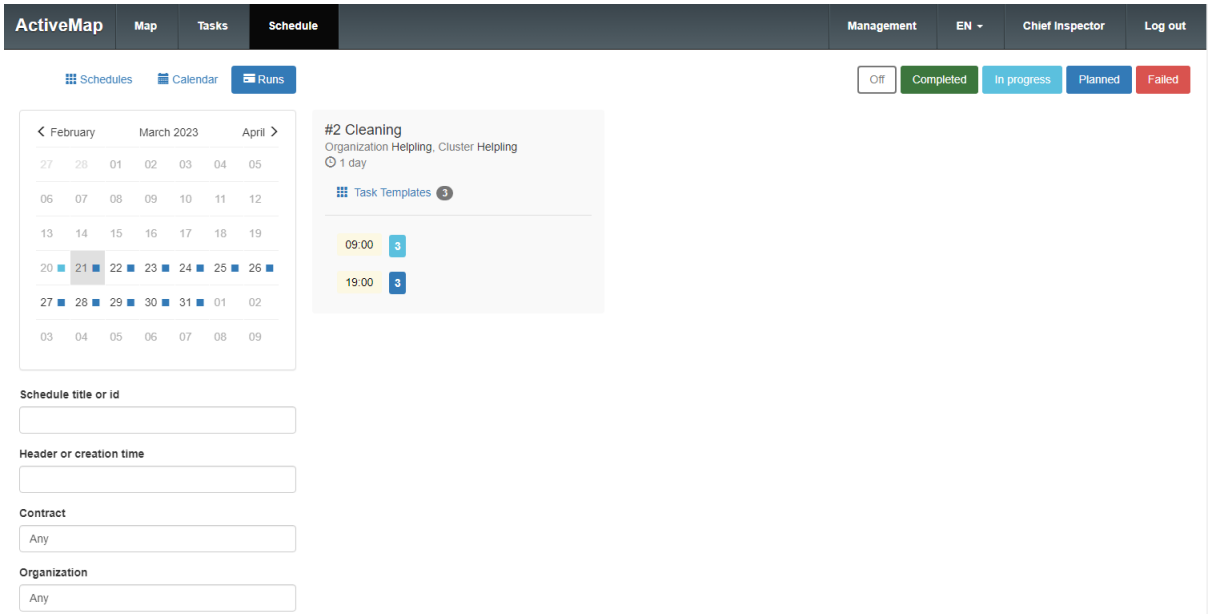


Fig. 2.48: Launches for the selected date

To the right of the calendar the schedule cards with launches for that day are placed. The schedule card displays its name, contract, a button to go to the list of templates attached to the schedule, the start time and the number of created tasks with status marking. Clicking on a start time in the card will take you to the task templates created at that time (Fig. 2.49).

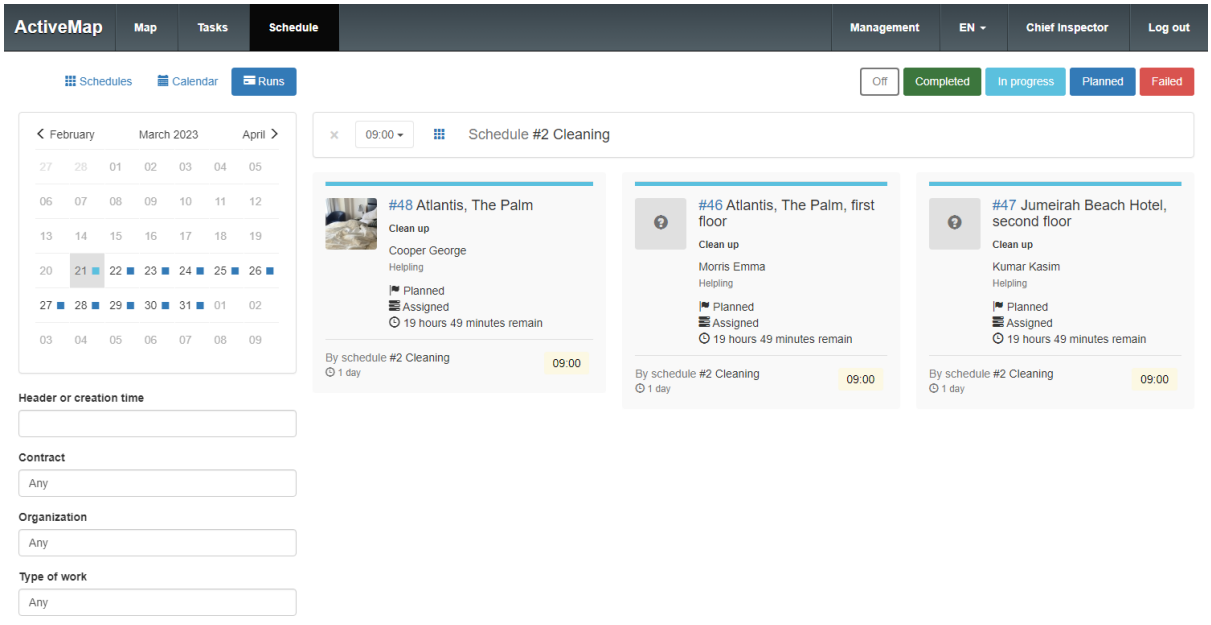


Fig. 2.49: Task templates

Creating and editing schedules and task templates are available for the following roles:

- Administrator,
- Cluster Administrator,

- Organization Administrator.

Users with other roles can only view schedules and templates.

2.7.2 Management module

The management module allows to view information and configure work with organizations, users, tasks, layers, layer groups and their parameters. A detailed description of the management tools can be found in the ActiveMap Web Administrator's Guide.

To access the management module, click on "Management" on the user panel on the main page of geoportal (Fig. 2.50):

Fig. 2.50: Accessing the management module

Management capabilities are determined by the user's role in the system. User roles are assigned by the Organization Administrator or Cluster Administrator. Management module includes the following elements (Fig. 2.51):

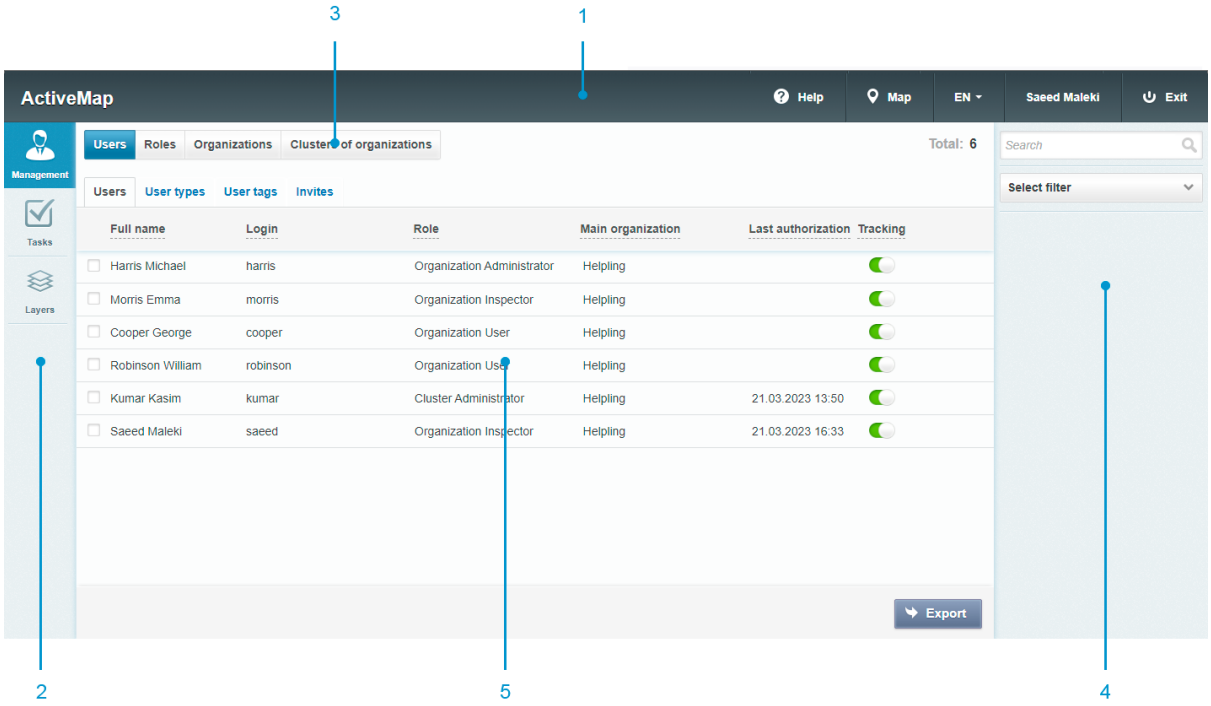


Fig. 2.51: Management module

1. User panel (contains buttons to access help, map, change program language and exit the system).
2. Navigation panel of functional blocks (contains the main system management tools).

3. Tab bar (each tab contains information and a set of buttons to manage them).
4. Search string and filter (used to search for system elements).
5. Administration area (displays selected elements and their components).

Basic information about the controls

Table sorting

All information about the main system elements (users, organizations, layers, etc.) is presented in the corresponding tabs in a tabular form. Using these tables, the user can sort the available data.

To organize information about a particular element of the system, you need to go to the tab with that element and left-click on the title of the column by which the sorting should be done. When you click again on the column header, sorting will be done in reverse order.

Search string and filter

A search string 

is available in the right part of the page.

To search for an element, enter part of its name in the search string, after which all elements that correspond to the entered query will be displayed in the administration area. The search is performed on all elements of the system.

In addition, you can use the filter located below the search string to select data according to specified search criteria. To get the most accurate search results, you can use the search string and filter at the same time (where both tools are available at once).

Adding a new element

To add a new element, you have to go to the section of interest and click 

. The appropriate rights are required to add new elements. When you click this button, a new window opens, where you have to fill in the required fields and click 

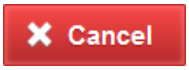
. To cancel adding a new element, click the 

button.

Editing an element

To change the data about a certain element, you have to go to the section of interest, put the cursor on the element name and click on the edit sign  located on the right side of the selected row. Editing elements requires the corresponding rights.

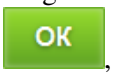
The edit sign  appears only after hovering over the row with the element name. Clicking it will open a form where you can enter new information about the selected element and click 

. To cancel editing an element, click the 

button.

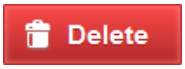
In addition, the editing form can be opened by double-clicking on the row with the element name with the left mouse button.

Deleting an element

To delete a specific element, go to the section of interest, hover over the row with the name of this element and click on the delete sign  located on the right side of the selected row. Deleting records requires the corresponding rights. The delete sign  appears only after hovering over the row with the element name. Clicking it will open a dialog box confirming the deletion of the element. To delete the element from the system, click 

, to cancel the deletion, click the 

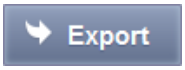
button.

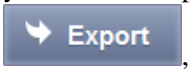
To delete multiple elements, place the mouse cursor on the rows with these elements and check the box next to their names. After that, the 

button becomes available in the lower part of the administration area. When you click on it, a dialog box confirming deleting the selected elements will open.

Note: When you try to delete your user or organization, the message appears in the administration area informing that deletion is not possible.

Data export

The 

button is required to export data as a separate Excel file (if you have the appropriate rights). If you use the search string and then click 

, the downloaded Excel file will contain information only about the found elements.

User panel

The panel consists of the following elements (Fig. 2.52):

- “Help” - redirects the user from the main page of the system to the page with manuals.
- “Map” - navigates to the main system page.
- “Interface language” - switches the interface to one of the available languages.
- “User name” - displays the name of current user.
- “Exit” - logs out of the user’s account.

Fig. 2.52: User panel

Navigation bar of functional blocks

Navigation bar has the following functional blocks:

- “Management” - management of organizations, users and their parameters (*“Management” block* (page 42));
- “Tasks” - management of parameters and entities related to tasks: work types, stages of execution, priorities and custom fields, file stickers, access rights to tasks and plugins (*“Tasks” block* (page 50));
- “Layers” - management of layers, layer groups and their parameters (*“Layers” block* (page 56)).

“Management” block

In the “Management” block, you can find detailed information about system users, roles, organizations, clusters and their rights to groups.

“Users” tab

The “Users” tab contains information about registered users in the system, roles and organizations and includes second level tabs (Fig. 2.53):

- “Users”,
- “User Types”,
- “User Tags”,
- “Invites”,
- “LDAP” (available only to users with the roles of Administrator, Cluster Administrator, Chief Inspector, Cluster Inspector, Organization Administrator, and Inspector).

Users

Basic information about system users is presented in the form of a table with the following columns:

- “Full name” – full name of the user;
- “Login” - username used to log into the system;
- “Role” - user’s role in the system (Administrator, Chief Inspector, Client, etc.);
- “Main organization” - user’s affiliation with the organization;
- “Last authorization” – user authorization time in the system applications;
- “Tracking” – management of the user’s monitoring function (enabling the tracking of the user’s movements when using ActiveMap Mobile).

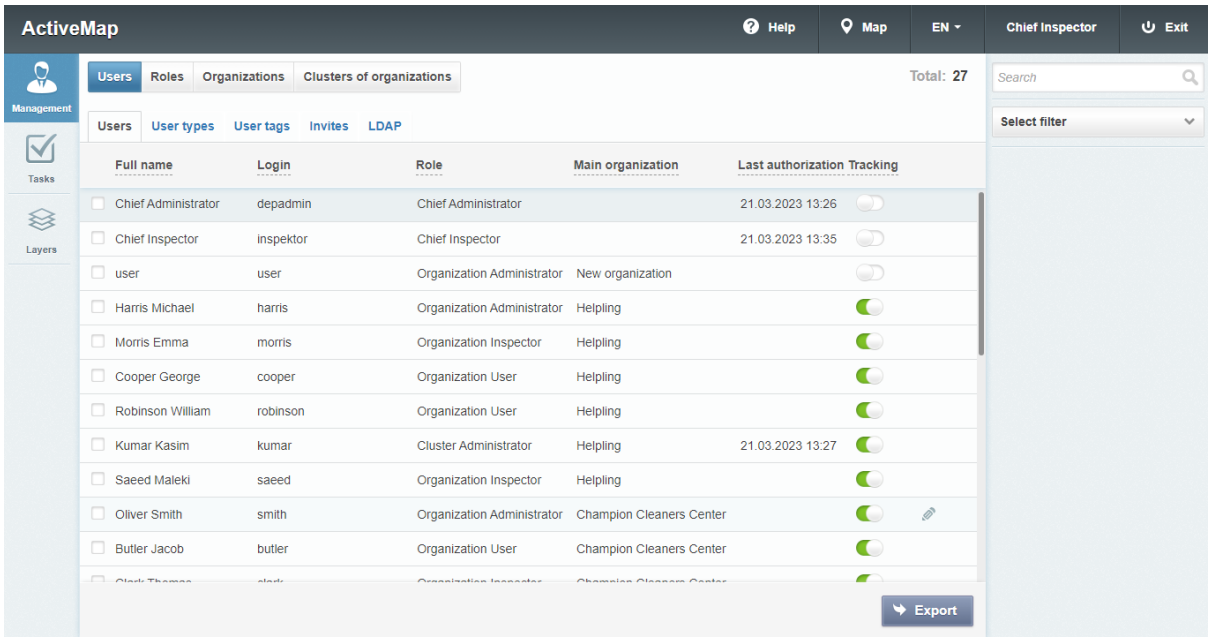


Fig. 2.53: “Users” tab

You can use the search bar to search by name or login. To find users by organization, cluster, role, user type, tag, login, LDAP authentication, and lock status use the filter located below the search bar.

User types

The tab contains a table with information about user types (Fig. 2.54).

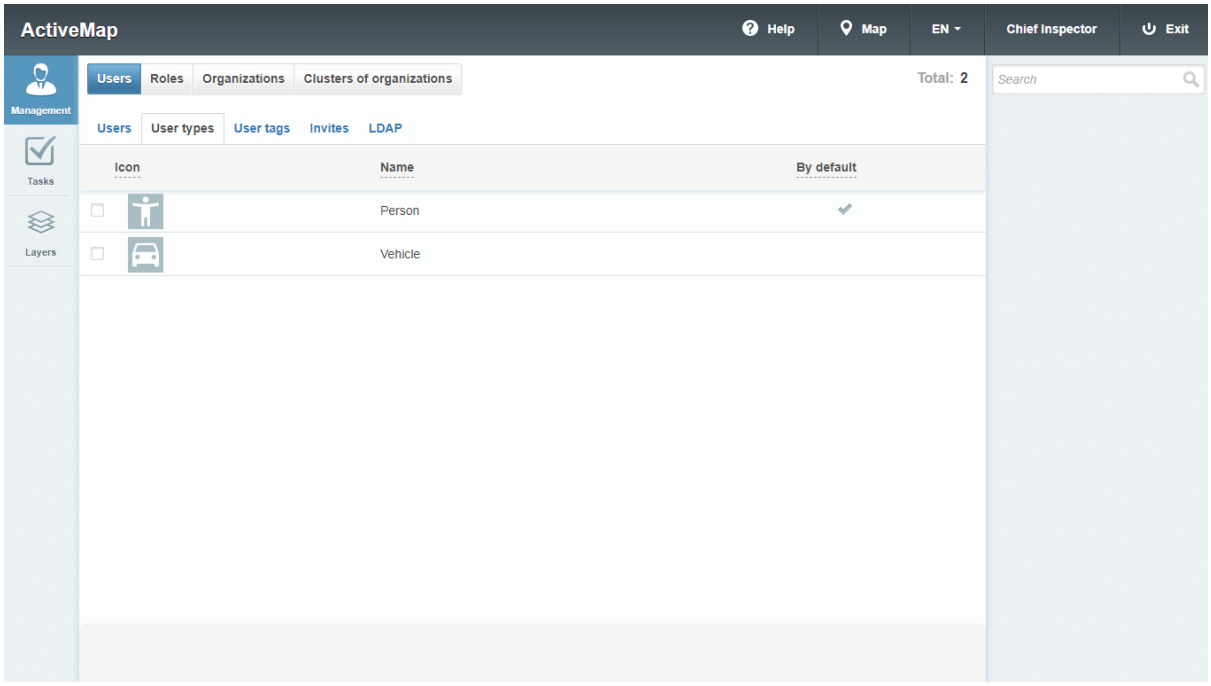


Fig. 2.54: “User types” tab

Two user types are automatically available in the system: “Vehicle” and “Person”. The “Person” user type is always the default user type and cannot be deleted. Any other type cannot be made the default user type.

User tags

The tab contains a list of user labels with colors and names of the tags (Fig. 2.55). Tags are used to display information about the user, in addition to the information provided by the system. For example, the user’s phone model.

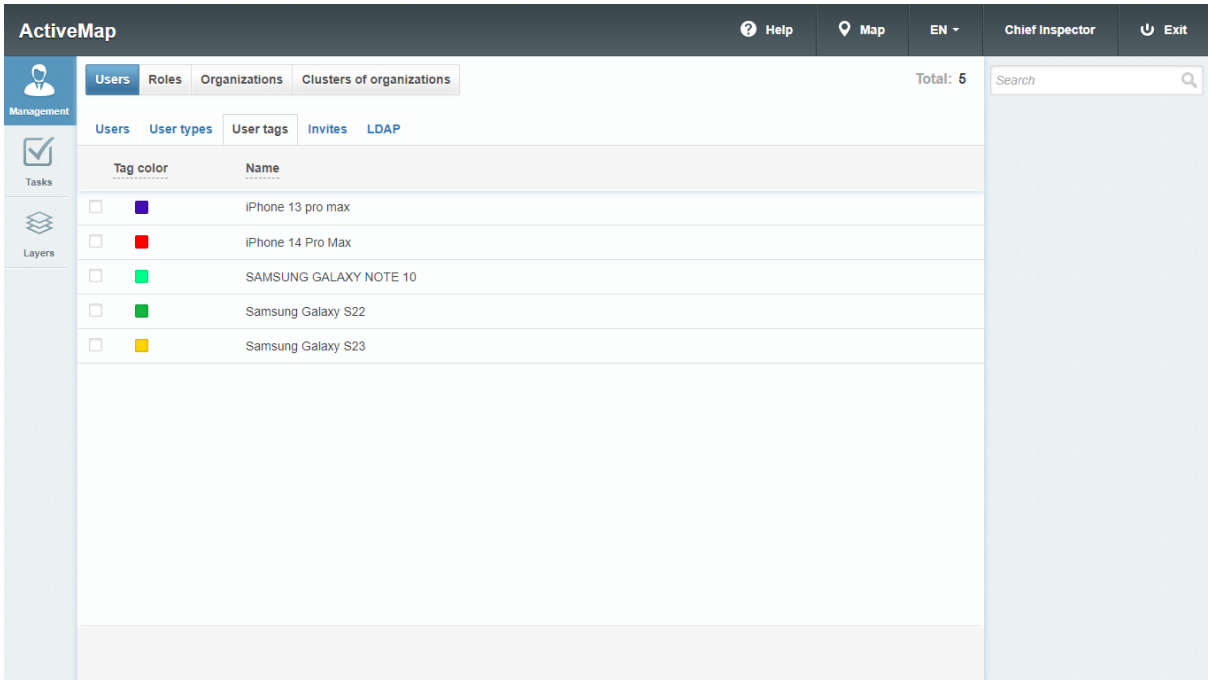


Fig. 2.55: “User tags” tab

Invites

The tab contains a list of invitations sent to the current user by the administrator (Fig. 2.56). Invitations are links that allow you to log in to the ActiveMap Mobile without entering the server address, login and password.

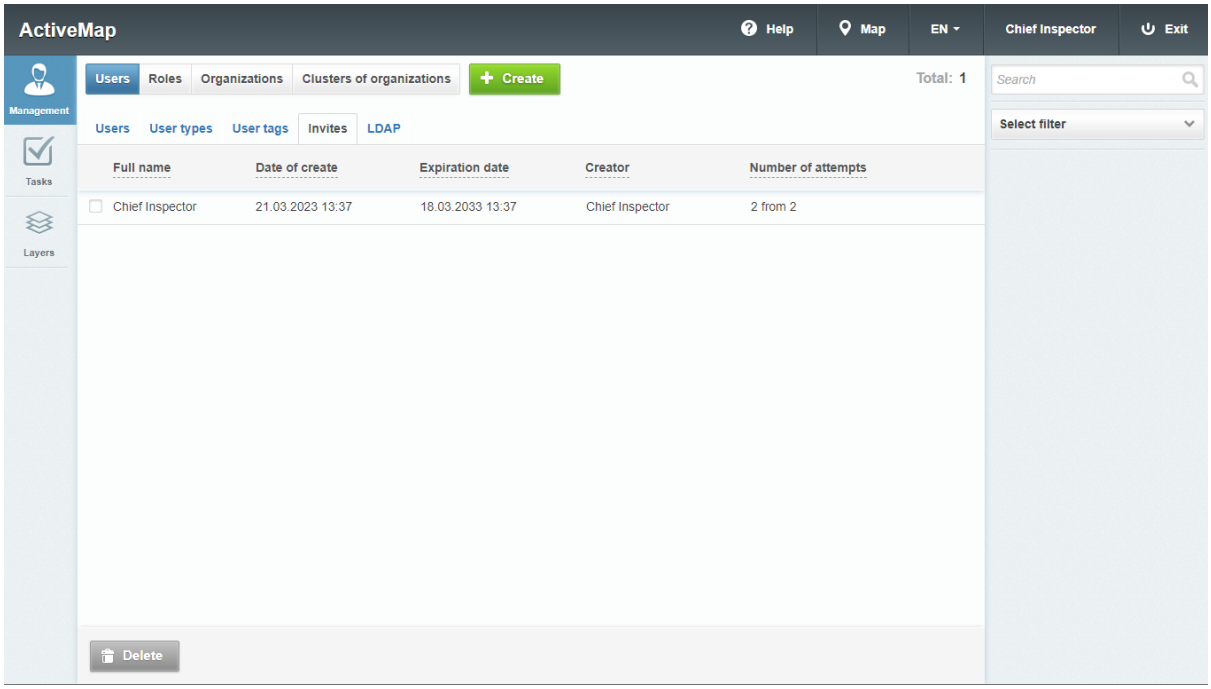


Fig. 2.56: “Invites” tab

Clicking on  displays basic information about the invitation with the ability to copy the link (Fig. 2.57).

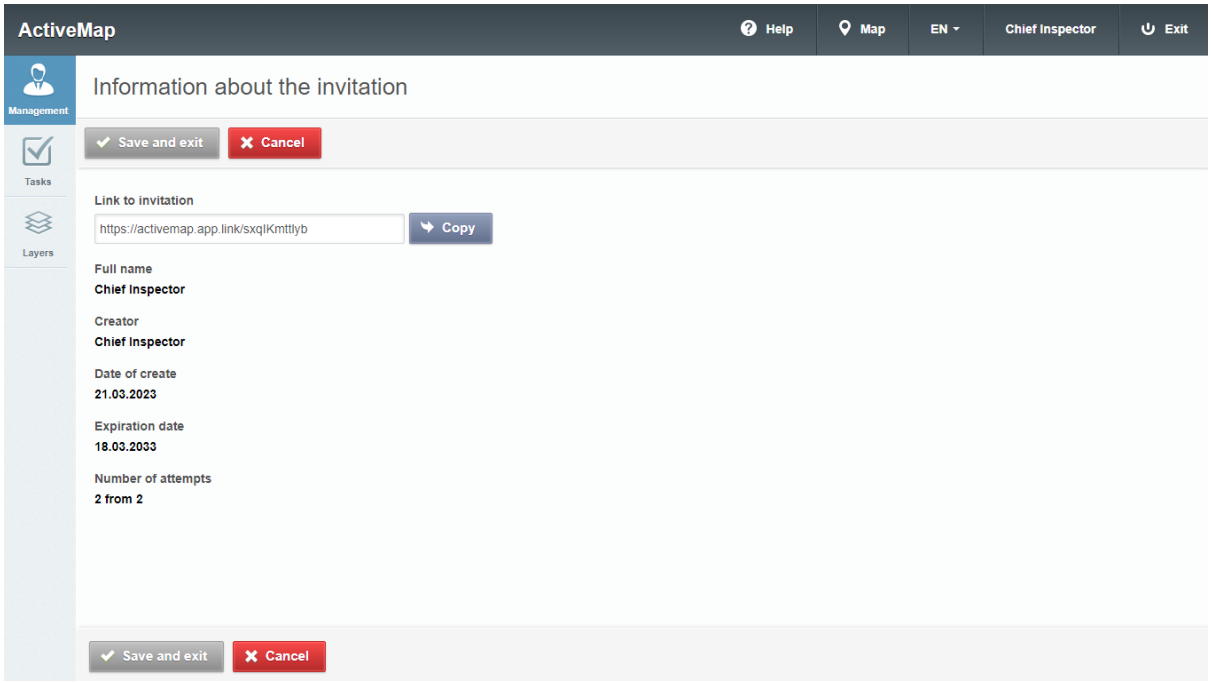


Fig. 2.57: Invitation info

Selecting  opens a window where you can also copy the link (Fig. 2.58).

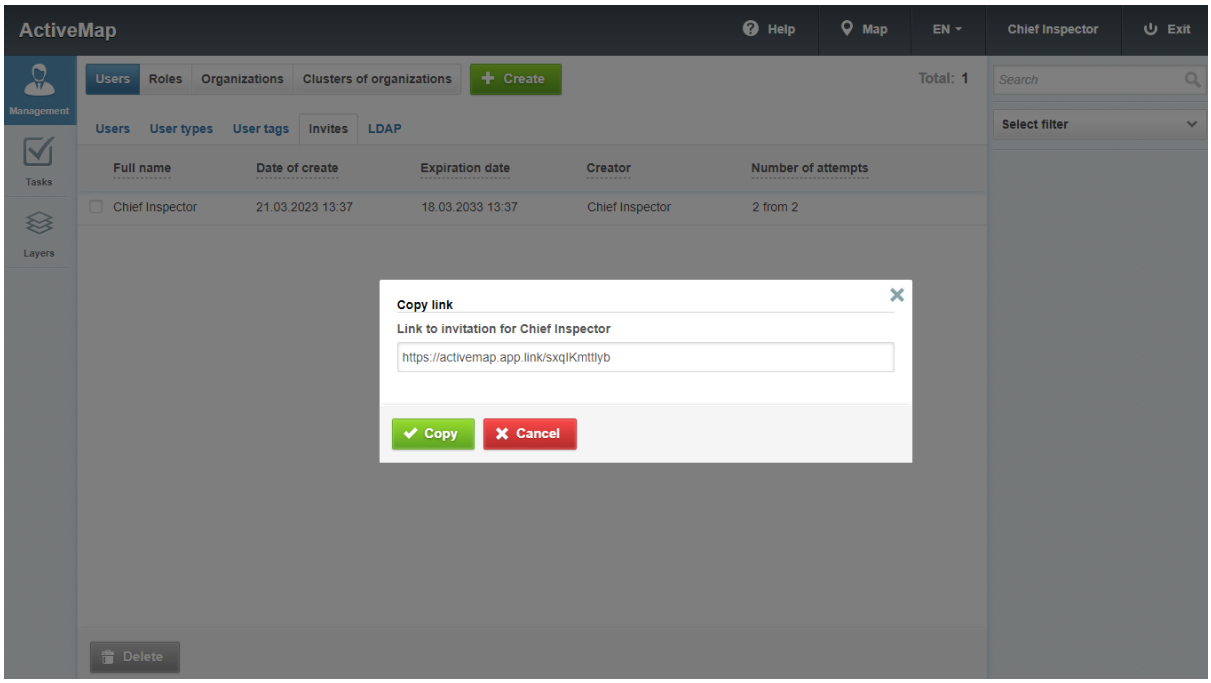


Fig. 2.58: Invitation link

Clicking on  will remove the invitation from the list. You can also delete

an invitation by ticking the required box, after which the Delete button becomes available.

LDAP

"LDAP" tab is available to users with roles of Administrator, Cluster Administrator, Organization Administrator, Chief Inspector, Cluster Inspector, and Organization Inspector.

LDAP is an open protocol used to store and retrieve data from a hierarchically structured directory. It is typically used to store information about an organization, its assets and users. It is a unified authorization system through which all software products used in the organization work. The ActiveMap system also supports the LDAP protocol by enabling the "Authorize via LDAP" toggle switch in the user settings. The "LDAP" tab (Fig. 2.59) provides settings for integration of ActiveMap with LDAP. By default, LDAP integration is disabled. If integration with LDAP is required, fill the configuration fields with data provided by the organization.

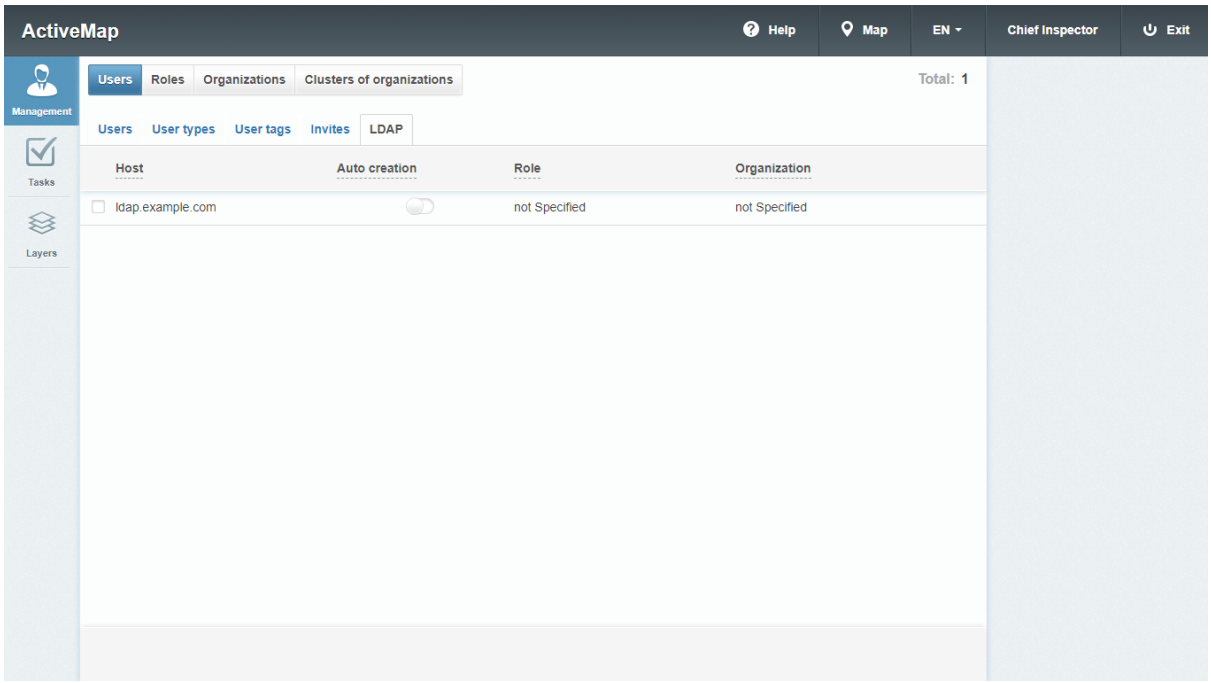


Fig. 2.59: Default LDAP configuration

“Roles” tab

The “Roles” tab displays a list of roles in the system (Fig. 2.60).

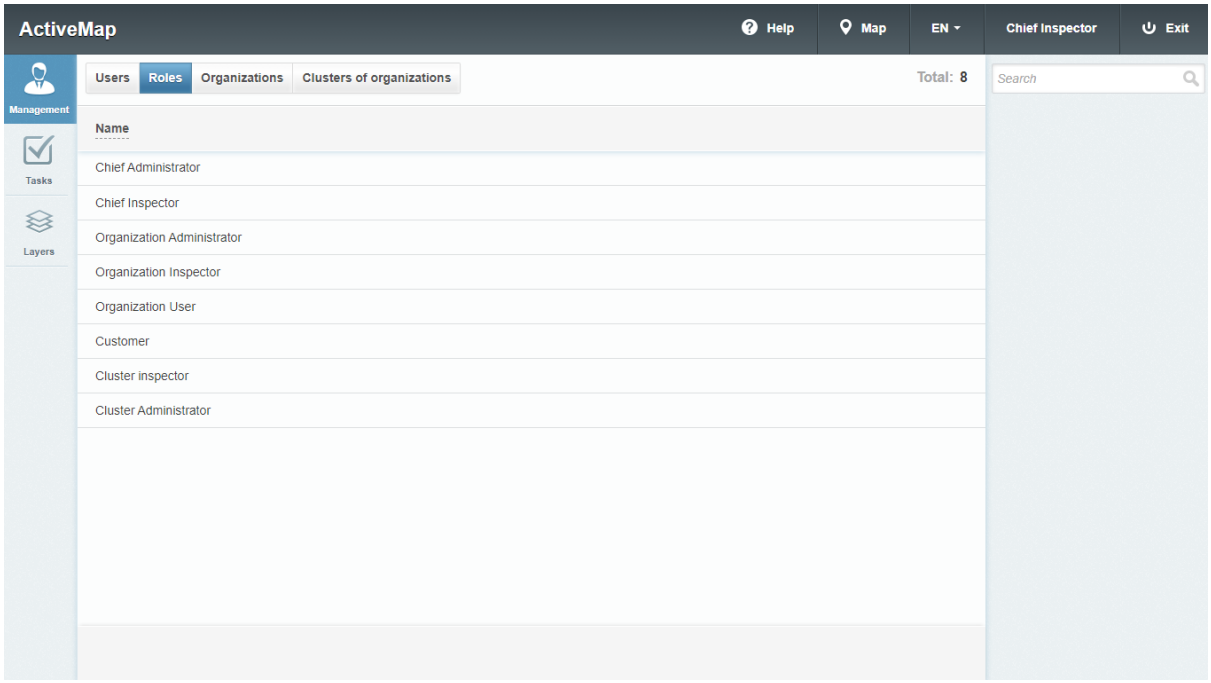


Fig. 2.60: “Roles” tab

Roles are assigned by administrators when creating user accounts and differ from each other by the set of actions that users can perform.

- **“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.

“Organizations” tab

When switching to the “Organizations” tab, the user can view a list of all existing organizations in the system (Fig. 2.61):

- “Name” - name of the organization;
- “Cluster of the organization” - name of the cluster the organization belongs to;
- “Client organization” - indication of whether the organization is a client (client organization is an association of users who sent their requests through a mobile application, monitor the status of their execution, have the ability to rate the work done, but have limited rights when working in the system).

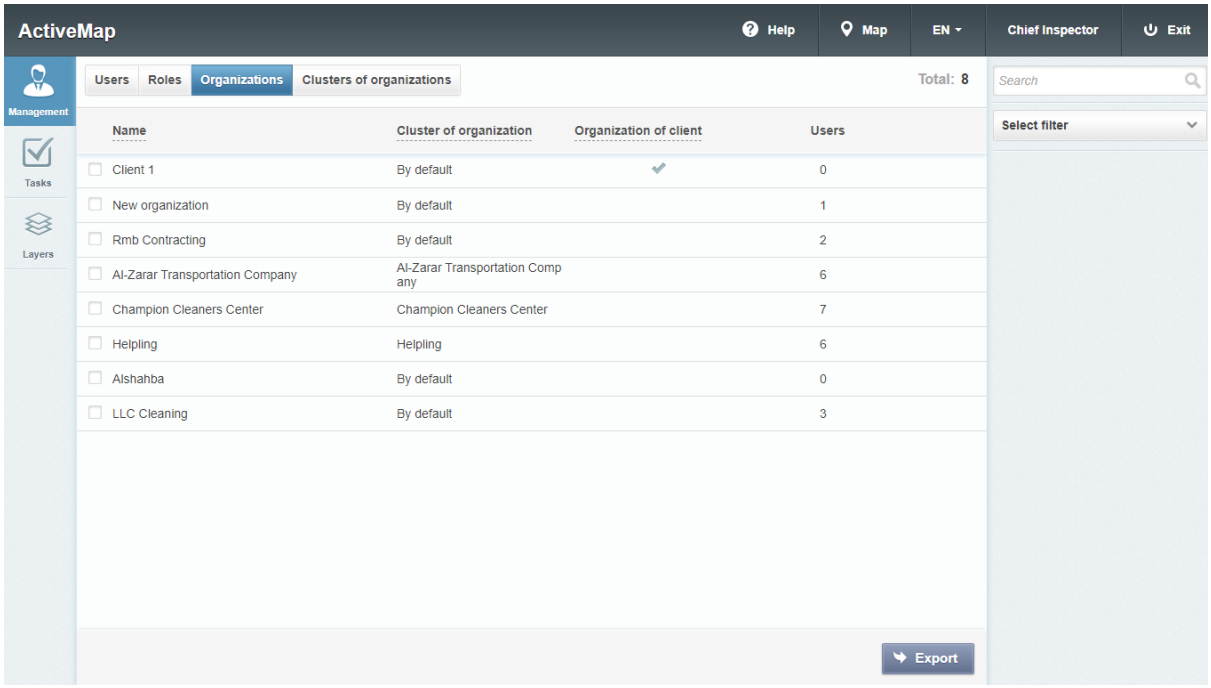


Fig. 2.61: “Organizations” tab

In the “Organizations” tab, the user can work with the search bar and filter. Users with the roles Administrator, Cluster and Organization Administrator, Chief Inspector, Cluster and Organization Inspector additionally have a “Users” column with the number of users in the organization.

“Clusters of organizations” tab

The “Clusters of organizations” tab contains information about the grouping organizations in clusters (Fig. 2.62). Until configured by the administrator, all organizations are in the “Default” cluster.

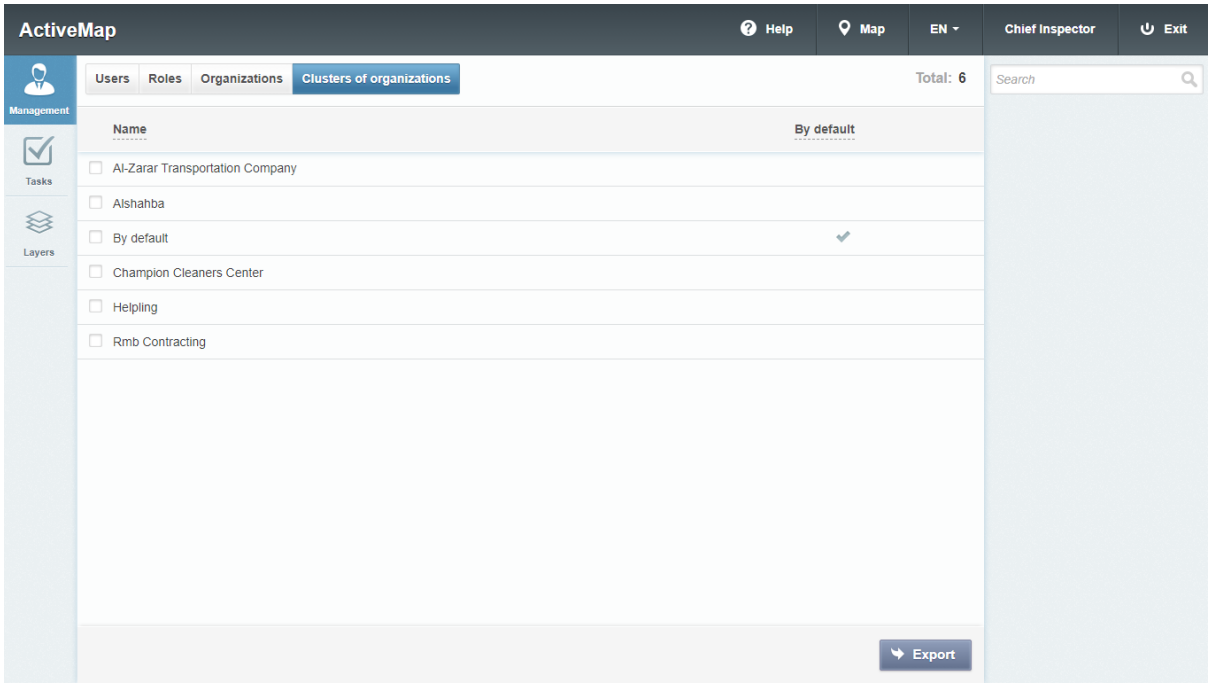


Fig. 2.62: “Clusters of organizations” tab

“Tasks” block

The “Tasks” block is designed to work with task parameters (Fig. 2.63).

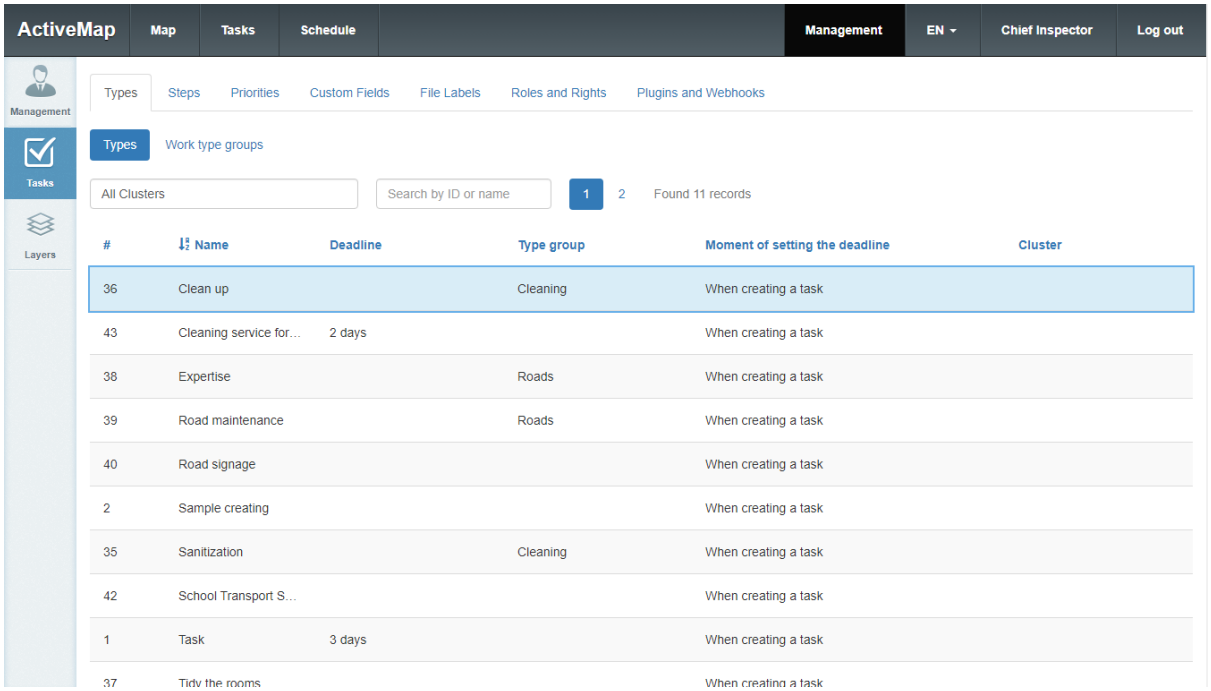


Fig. 2.63: “Tasks” block

The following tabs are available at the top of the window:

- “Types”,

- “Steps”,
- “Priorities”,
- “Custom Fields”,
- “File Labels”.

“Types” tab

By default, clicking on “Tasks” opens the “Type” tab (Fig. 2.63). This tab contains two subsections: “Types” and “Work type groups”.

Basic information about work types is presented in the form of a table with columns:

- “Name” - name of the work type;
- “Deadline” - time of work completion (defined by the task description for this type of work);
- “Type group” - the group to which this type belongs;
- “Moment of setting the deadline” - the time from which the task completion time is counted: “when creating a task” - at the time of creating a task in the system, or “when assigning a task” - when a task is assigned to a specific performer;
- “Cluster” - the cluster of organizations to which this type of work is assigned (if the cluster is not specified, the work type will be available to all organizations).

Work type groups allows to visually group objects in the ActiveMap Mobile and ActiveMap Desktop applications. The work type groups table contains columns with their names and belonging to clusters (Fig. 2.64).

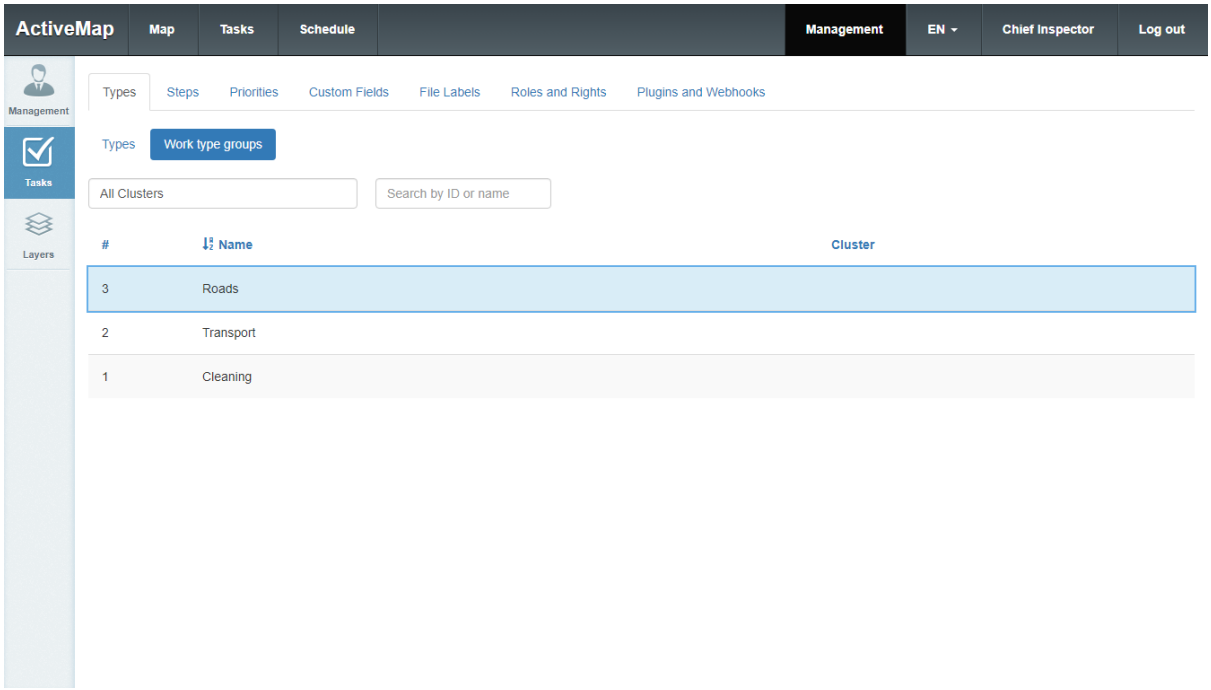


Fig. 2.64: “Work type groups” subsection

This tab has a search bar for searching by ID and name, filtering by clusters is also available.

“Steps” tab

This tab displays a list of existing work steps used to track the progress of task completion (Fig. 2.65).

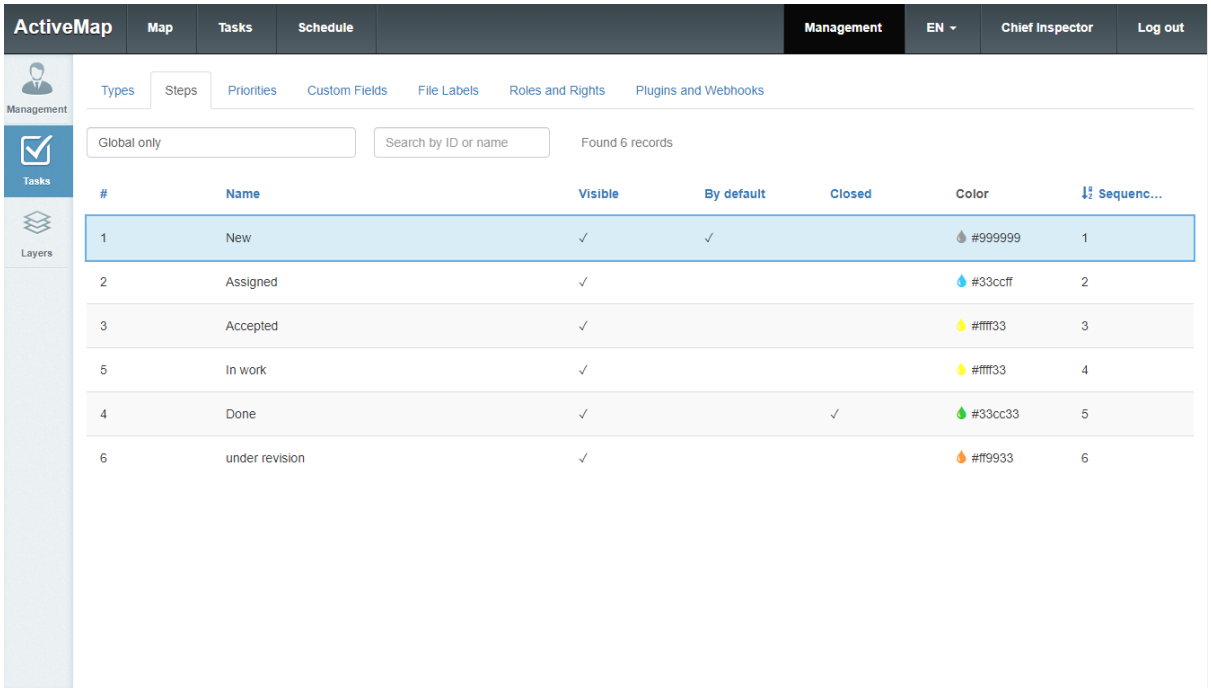


Fig. 2.65: Steps tab

You can find the desired step in the list using the search bar and filters by clusters at the top of the window.

"Priorities" tab

This tab displays a list of existing work priorities (Fig. 2.66). Priorities allow to group work types by importance.

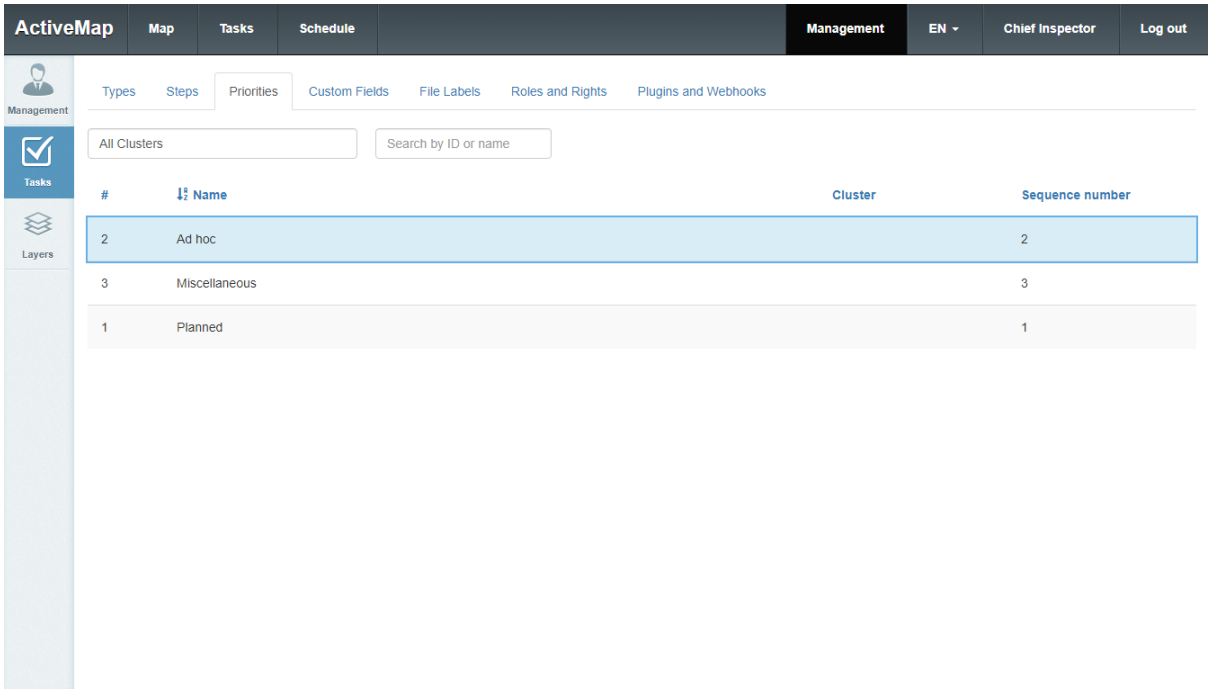


Fig. 2.66: Priorities tab

You can find the desired priority in the list using the search bar and filters by clusters at the top of the window.

"Custom Fields" tab

This tab displays a list of existing custom fields (Fig. 2.67). Custom fields are used to add user-defined fields to task creation form. Such fields may be attached to a specific cluster or work type and correspond to its theme. For example, for work types that involve field staff interacting with clients, a "Phone number" field in which the client's phone number is entered can be created.

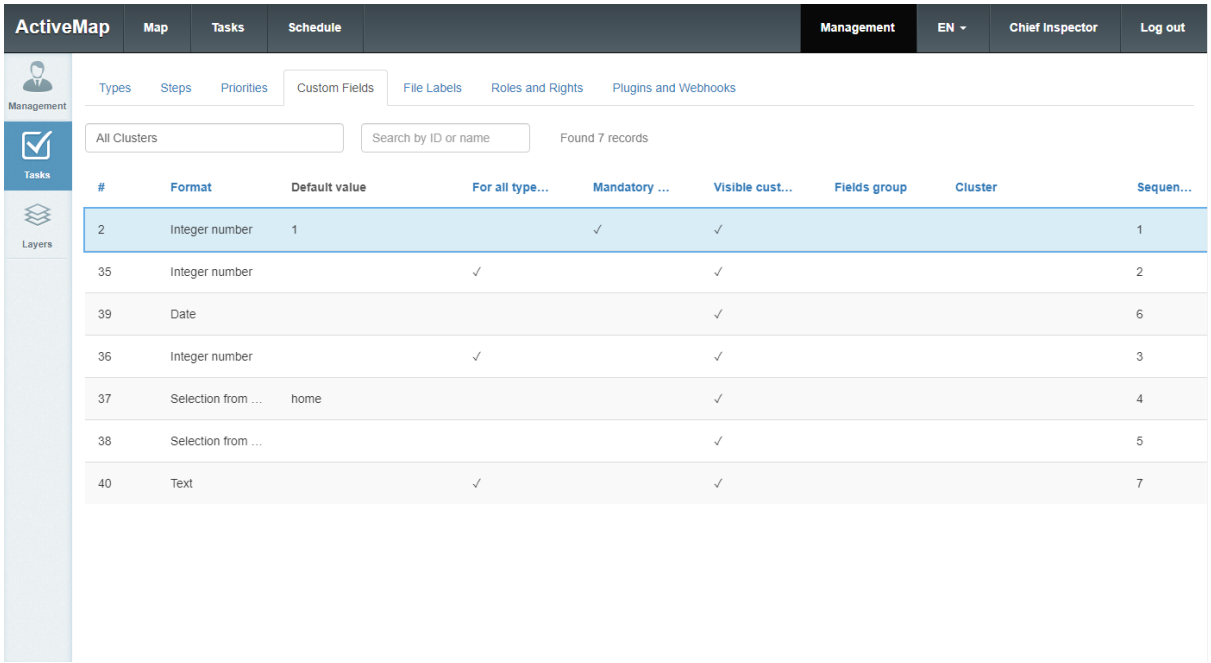


Fig. 2.67: “Custom Fields” Tab

“File Labels” tab

This tab displays a list of existing file labels (Fig. 2.68). Labels are used to mark photos when creating and editing tasks. For example, it could be labels “Before” and “After” to identify photographs showing progress in ongoing work. Labels can be attached to a specific cluster or type of work.

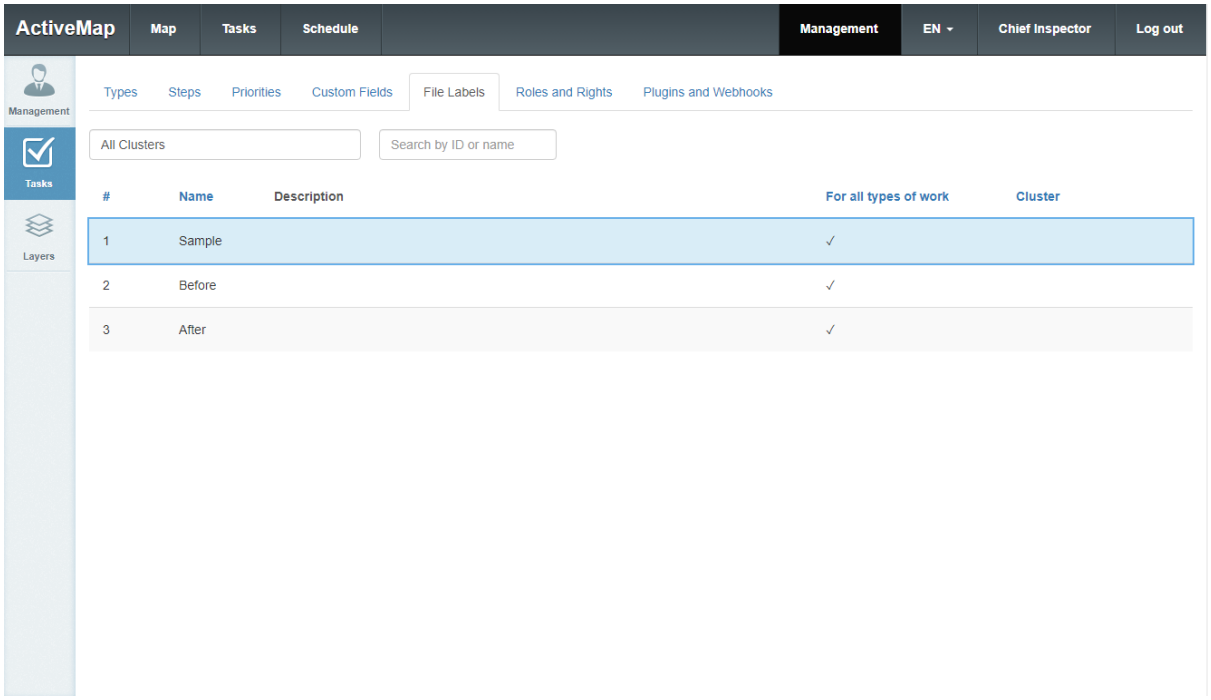


Fig. 2.68: “File Labels” tab

“Layers” block

The “Layers” block is intended for work with cartographic layers of the system, tables and their groups. If you switch to the “Layers”, “Groups”, “Tables”, “Icons” tabs, you get access to the following controls: sorting of tables, search bar, adding new records, editing records, deleting records, exporting data (Fig. 2.69).

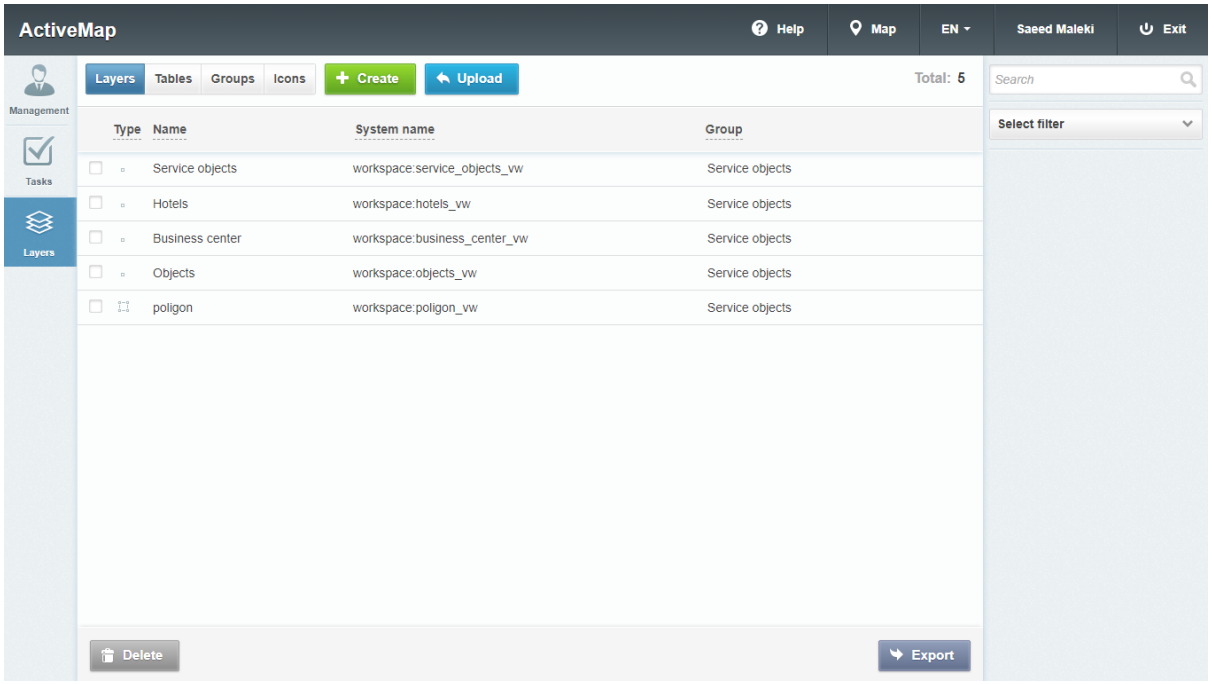


Fig. 2.69: “Layers” block

“Layers” tab

In the “Layers” tab, the user can view detailed information about the system’s layers. When you switch to this tab, a table with the following columns becomes available (Fig. 2.69):

- “Type” – geometry type (point, line, polygon or raster) that determines how the layer object appears on the map.
- “Name” – name of the layer in system applications.
- “System name” – name of the layer in database.
- “Group” – belonging to a certain group of the system.

When switching to the “Layers” tab, you can use the search line, as well as tools for creating new layers and editing/deleting the existing ones.

Adding a new layer

To add a new layer to the system, click 

– the layer creation window will open, containing the following tabs: “Main”, “Attributes” and “Servicing Objects”.

“Main” tab

“Main” tab contains the following fields that need to be filled in (Fig. 2.70):

- “Name” – name of the layer in system applications.
- “System name” – name of the layer in the database, consisting of Latin letters, without spaces or special characters. It is generated automatically when entering information in the “Name” field. If a non-latin title is entered in the “Name” field, transliteration is used. If you are not satisfied with the received name, you can enter your own version in this field. Automatic input will not work if you first fill in the “System name” and then the usual “Name”. Unlike the name, the system name cannot be edited after the layer has been created.
- “Group” – group in which the layer will be displayed.
- “Geometry type” – point, line, polygon.
- “Layer protocol”:
  - WMS - providing information in the form of a geographically referenced image;
  - WFS - providing information in the form of geospatial data.
- “Projection” – code of one of the common geographic projections.
- “Use for search” – layer indexing for search for its objects.
- “Style” – description of the features of the layer’s display on the screen (color, size, transparency and other properties of the layer’s objects and their labels).

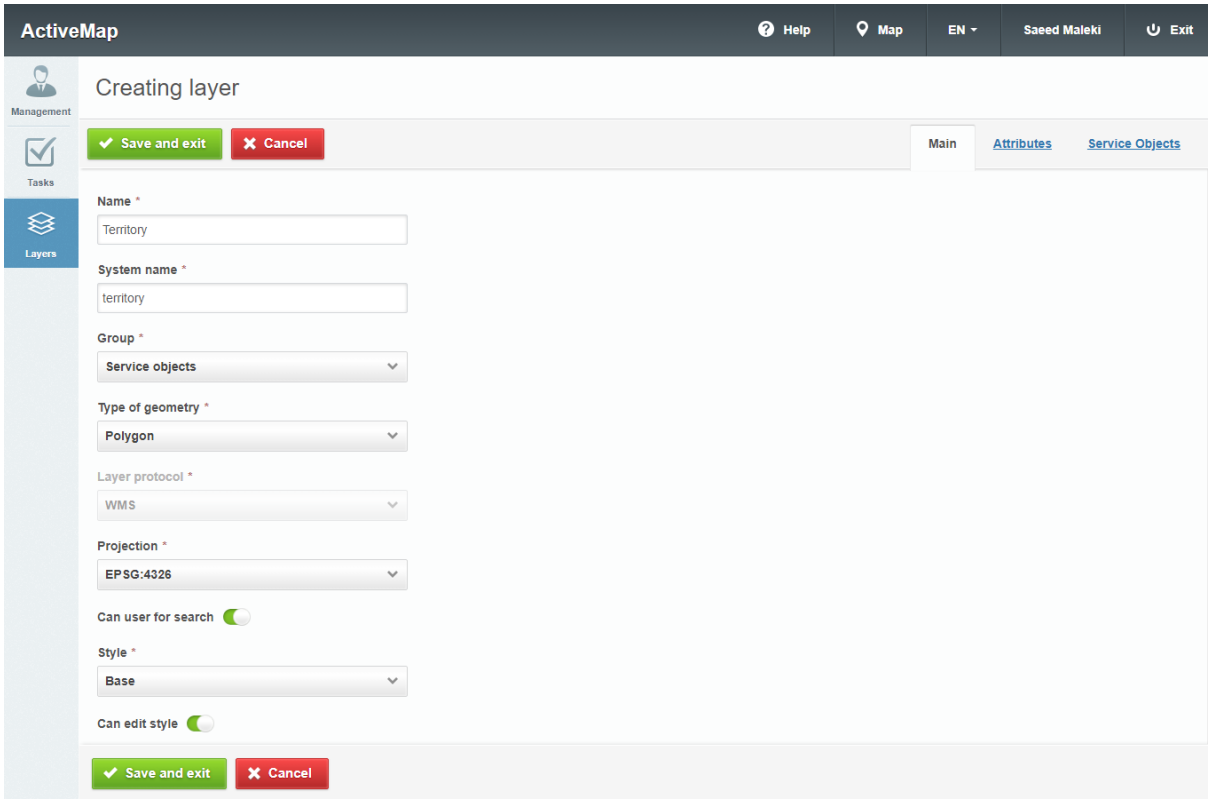


Fig. 2.70: Creating a layer, “Main” tab

When creating and editing a layer, the user can select one of the following styles:

- “Basic” - default style (point, line or polygon).
- “Simple” - style, where you can select an attribute for the caption and set its color, background, transparency and size (Fig. 2.71).

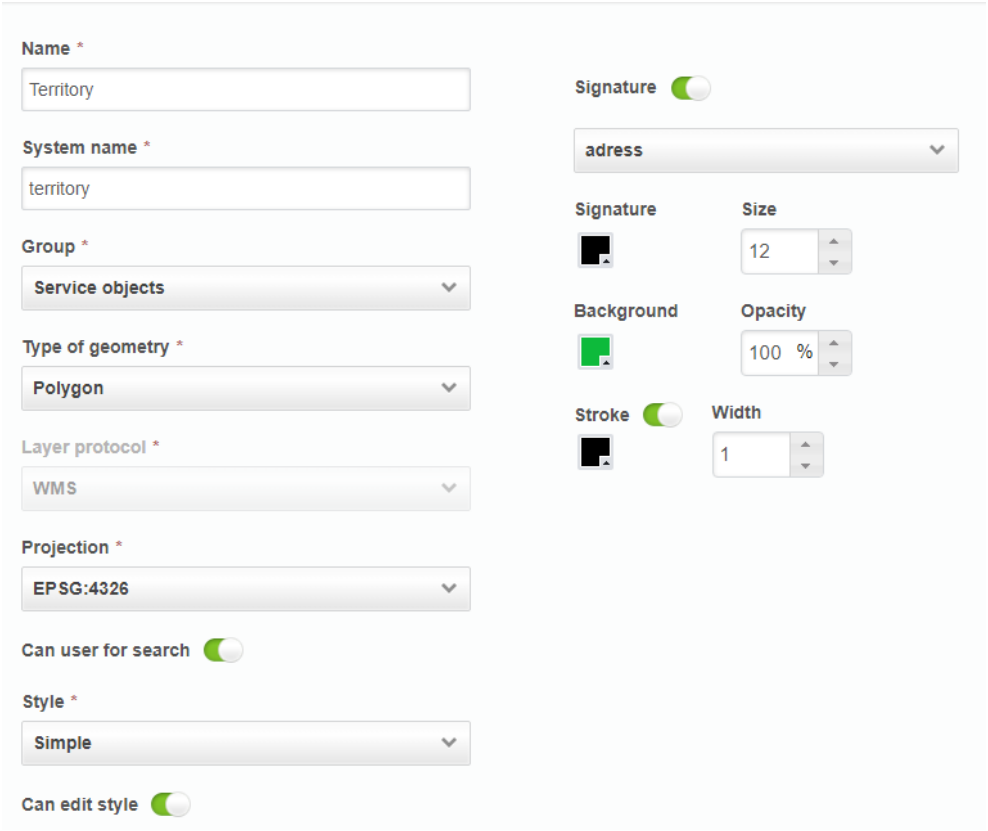


Fig. 2.71: Simple layer style

- “Advanced” - style generated using the GeoCSS language. When this style is selected, a separate form with code (Fig. 2.72) appears to the right of the input fields.

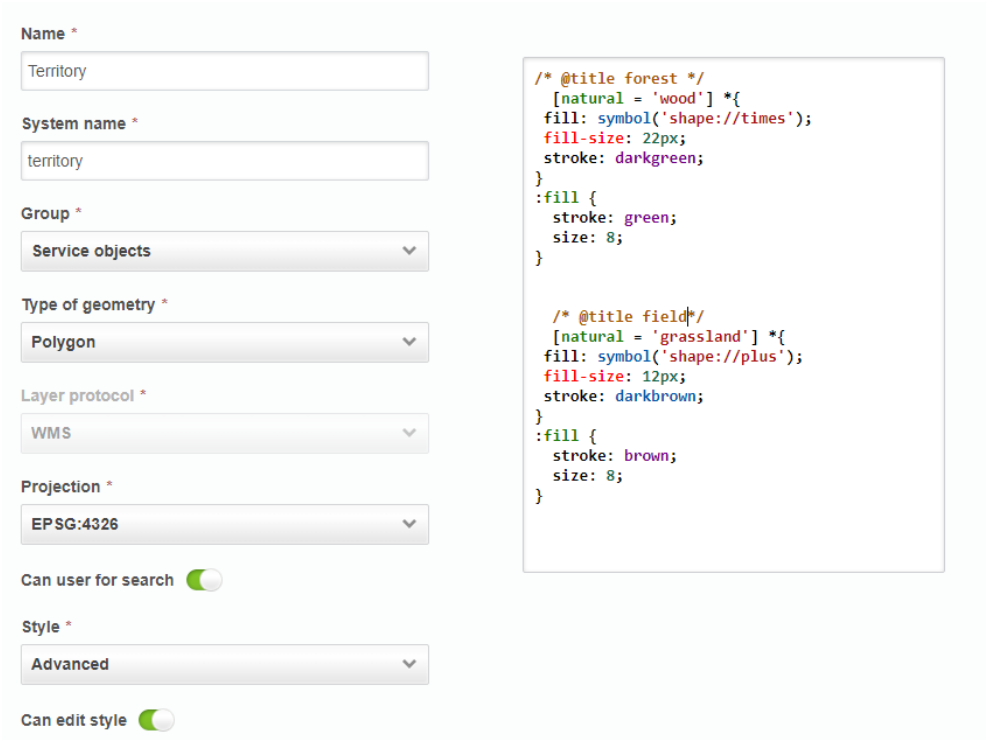


Fig. 2.72: Advanced layer style

If you select the simple style and the point geometry type, you can set the form of displaying points for each object (circle, triangle, square) or choose a style with an icon. Background color and icon size can be set, the shape can be outlined.

If you select line as the geometry type, you can set the background color and line thickness. To set a color for the stroke, select the appropriate stroke option.

If you select polygon as the geometry type, you can set not only the colors and sizes for the stroke, but also the transparency for the background.

"Attributes" tab

To add new attributes to the layer being created, switch to the "Attributes" tab (Fig. 2.73).

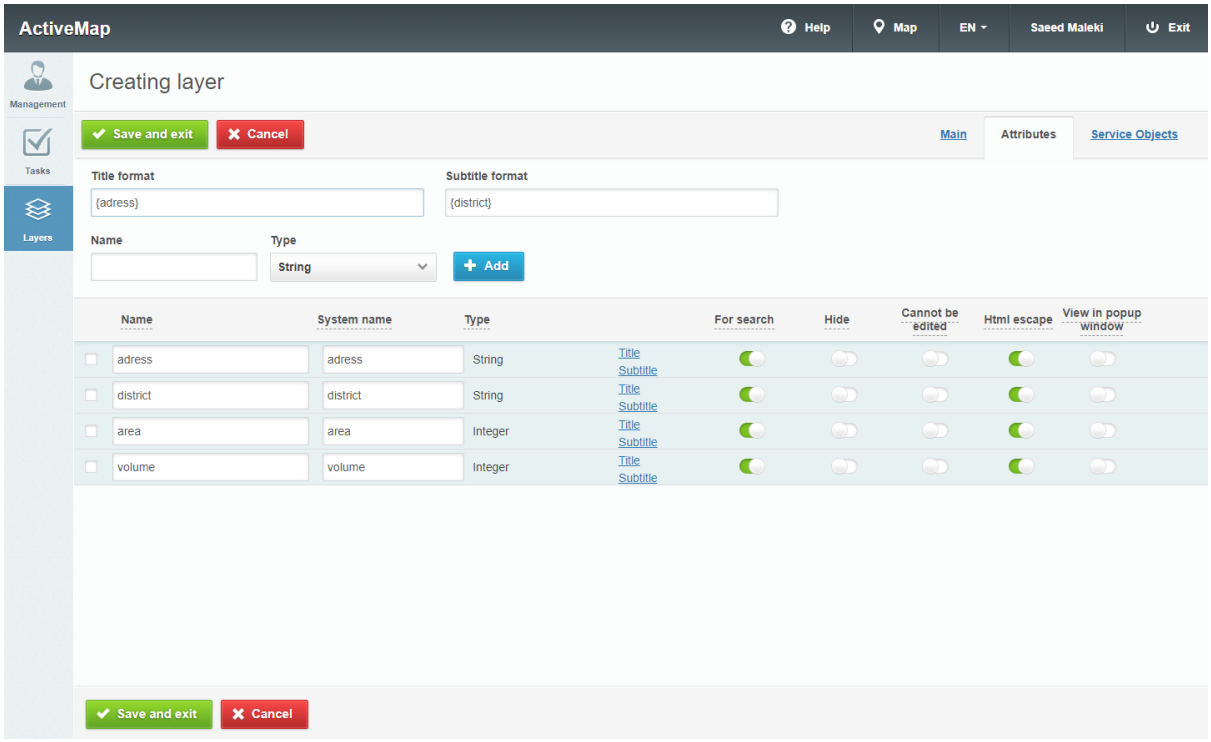


Fig. 2.73: Adding attribute data

When you switch to this tab, a table and a form with two fields appear: attribute name and type. The following types of attribute fields are supported:

- String,
- Integer,
- Boolean,
- Float,
- Date,
- Date and time,
- Reference table,
- Data table,
- Organization connection,
- Cluster connection.

To add a new attribute, fill in these fields and click “Add”. The new attribute will appear in the first row of the table.

The following actions are available to the user:

- changing the attribute’s name;
- defining additional functions for the attribute:
  - “Title” - clicking on the line makes attribute the title of the object’s card that is displayed when you click on the object on the map.

- "Subtitle" - clicking on the line makes attribute the subtitle of the object's card that is displayed when you click on the object on the map.
- "For search" - toggle switch to use the attribute for search.
- "Hide" - toggle switch to hide the attribute from users.
- "Cannot be edited" - toggle switch for attribute editing availability.
- "HTML escape" - toggle switch to interpret the attribute as HTML content (expands the possibilities of filling in attribute fields, for example, their content can be a link or formatted text).
- "View in pop-up window" - toggle switch to display the attribute in the object's card that is displayed when you click on the object on the map.

To add the next attribute, you have to fill in the form with fields again and click "Add".

The program allows to add a field to the layer to configure the display of objects of the same layer for users of different organizations and clusters. Objects of this layer will only be visible to the users of the organization (or cluster) specified in this field. To configure the display, you need to create a field with the data type "Link to an organization" or "Link to a cluster" (Fig. 2.74). The layer can have only one link field (either with an organization or with a cluster), when you try to create a second link field, the system will display a message: "The system attribute is already presented in the layer".

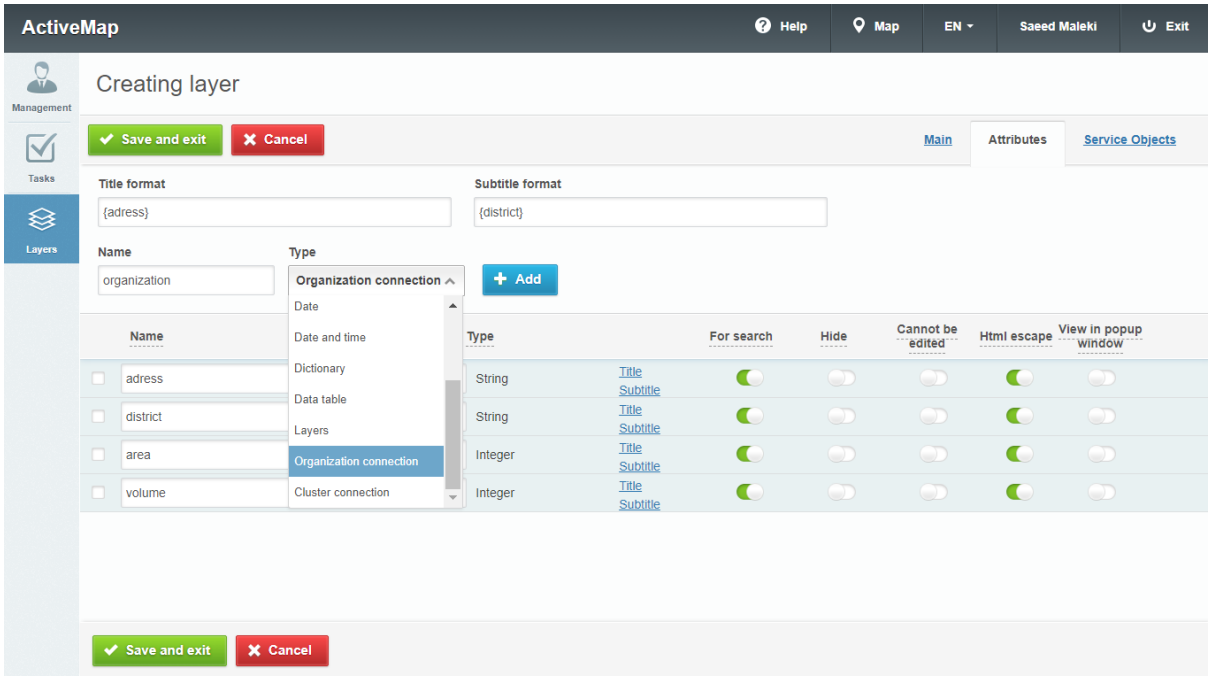


Fig. 2.74: Creating a link to an organization

When creating a layer object with a link field to an organization or cluster, you can select the desired option from the drop-down list (Fig. 2.75).

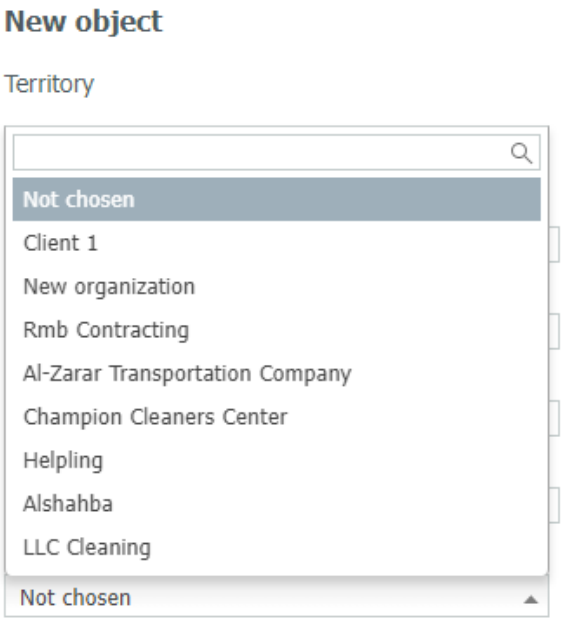


Fig. 2.75: Filling in a link field to an organization when creating an object

Users with "Administrator" and "Chief Inspector" roles can leave the system filter field empty when creating an object, and the object will be available to all users. For other users, the field is filled by default with the name of the main organization or main cluster of the user, and the object is only accessible to users of this organization or cluster.

"Service objects" tab

In this tab you can set the mapping between the fields of this layer and the fields of tasks that will be created based on the service objects (Fig. 2.76). This means that when creating tasks with a link to service objects, all or part of the task fields will be automatically filled with data about this service object. The mapping determines which fields it will be.

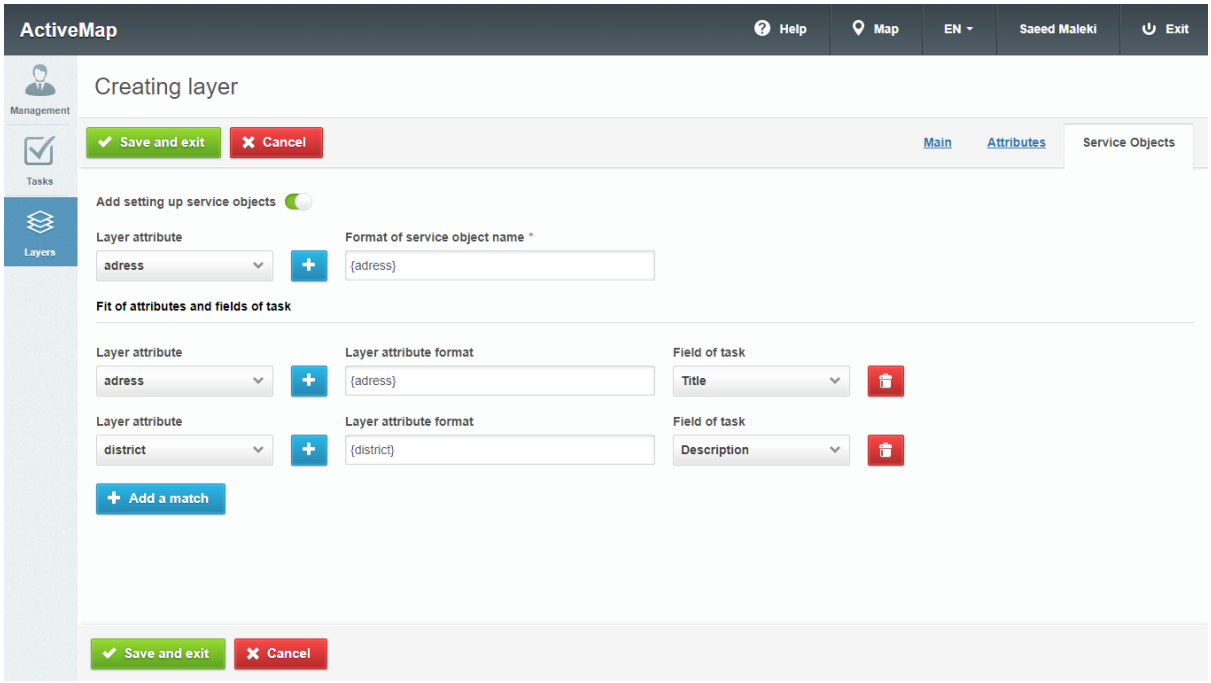


Fig. 2.76: "Service objects" tab

To configure service objects, you have to toggle the corresponding switch, then select an attribute for the service object name from the layer fields and click  . Name format will be displayed based on its mask. Name can consist of several attributes - for this, you need to create a corresponding mask by adding new attributes. In addition, you have to set the mapping between the layer attributes and task fields. To create a new mapping, click "+ Add a match", select an attribute and a task field from the drop-down lists, and click  . To delete a mapping, click  next to matching.

Editing layer information

To change layer information, click  or double-click on the row with the name of the selected layer. After that, a form (similar to the add form) will open in the administration area where you can fill in/change the fields of the layer (Fig. 2.77).

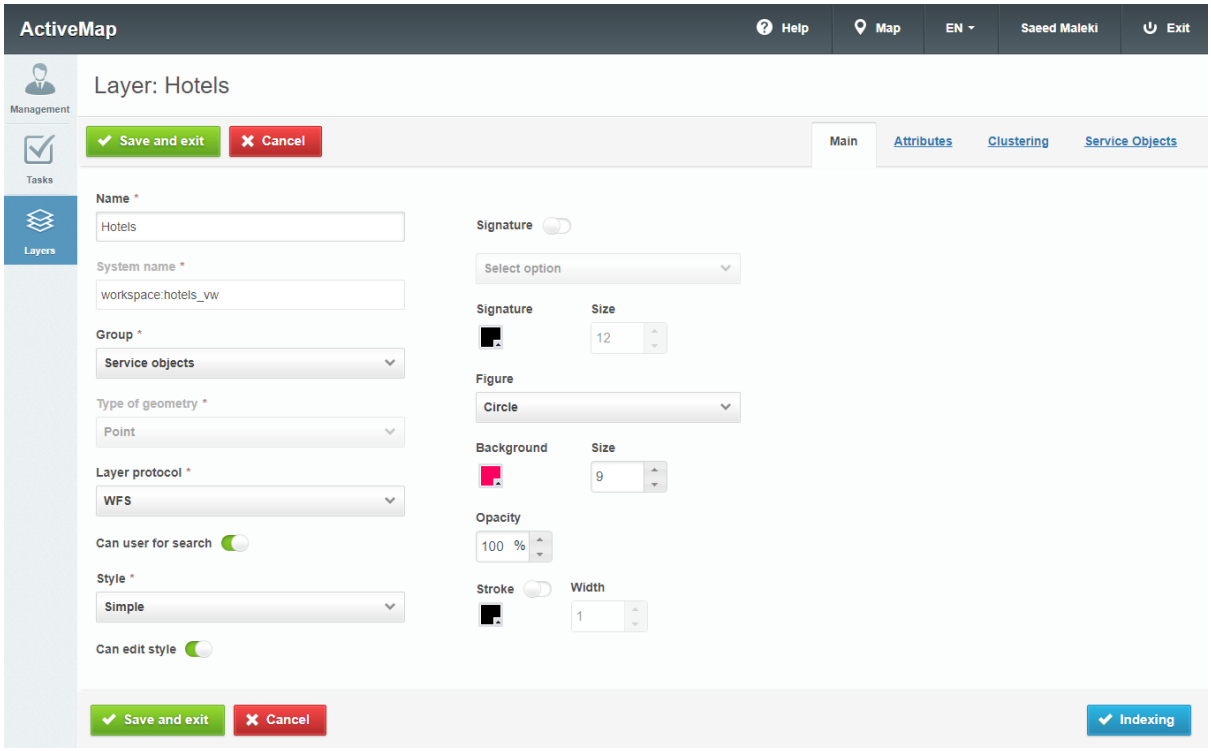


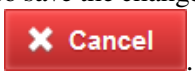
Fig. 2.77: Layer editing

When editing a layer, the "Index" button becomes available. When you click on it, the information about the selected layer is completely updated. You can use this button when you have added a new data and it is absent temporarily in the search results.

To change information about layer attributes, go to the "Attributes" tab in the layer editing window.The fields for adding new attributes, editing and deleting existing ones are available here.

Note: When deleting an attribute with a link to an organization or cluster, you should delete both the link field and the field that resulted from the link (result-label).

To save the changes you made, press 

, to cancel the editing - 

.

When editing a point layer (i.e., a layer with the "Point" geometry type), the "Clustering" tab appears in the administration area in addition to the "Main" and "Attributes" tabs.

Clustering is the display of a group of point layer objects located nearby with a single mark on the map. Clustering is possible only for point layers with WFS display method. The amount of objects grouped into a cluster is displayed as a number. The proximity of objects to be included in the cluster is calculated based on the scale.

When you switch to the "Clustering" tab in the editing window, a form opens

where you can enable clustering, set the maximum zoom level and create a new cluster (Fig. 2.78). Here there are graphs with the following headers: object count, icon, and label color.

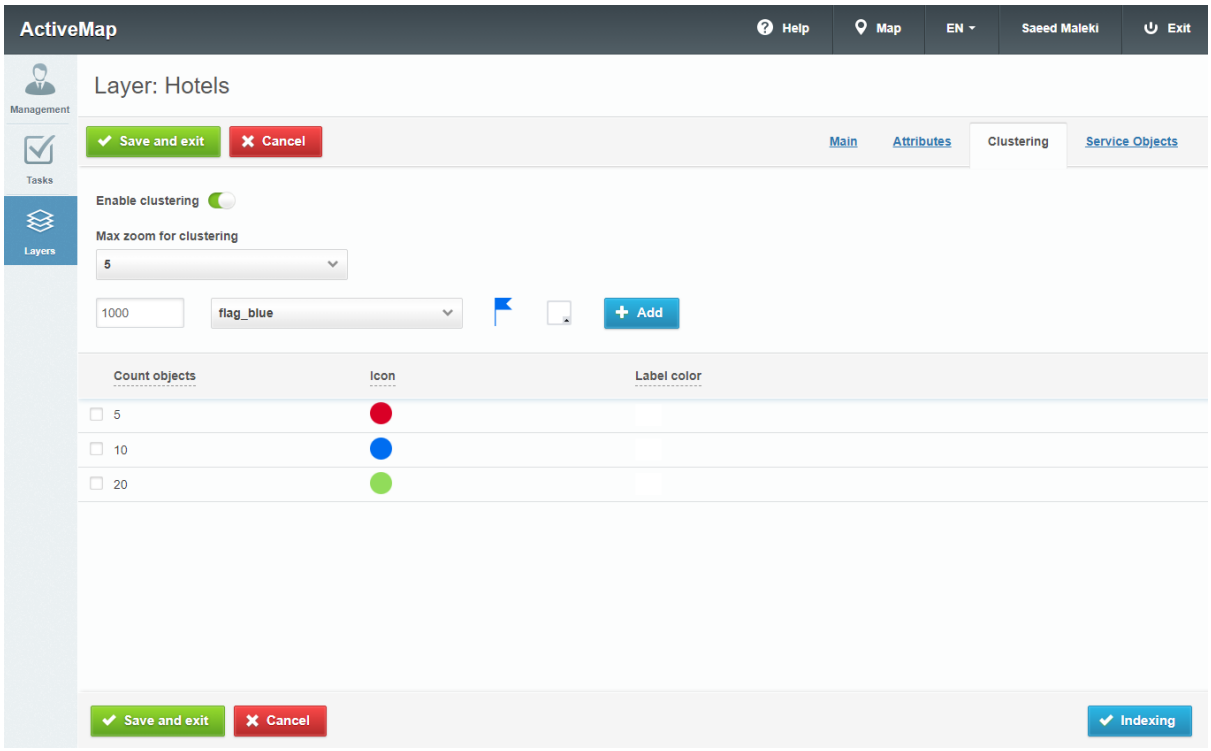


Fig. 2.78: Layer clustering settings

To add a new cluster, specify in the input field the number of objects contained in this cluster, select the image displayed on the map, set the label color and click "Add".

The column "Object Count" shows the range of the number of objects that corresponds to a specific cluster. If the number 5 is next to the first cluster, 10 is next to the second, and 15 is next to the third (as shown in Fig. 2.78), it means that up to 5 objects fall into the first cluster, from 6 to 10 in the second, and from 11 to 15 in the third. If the third cluster with 15 objects is the last in the list, then there will be no finite number of objects for it.

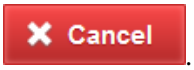
The "Icon" column stores cluster images that become available when viewing the map. The "Label color" column displays the color used for the caption on the map.

Layer deletion

To delete a layer, click  on the right side of the layer row. To delete multiple layers at once, check the corresponding rows and click the button 

at the bottom of the screen. The delete confirmation window will appear with a choice of layer deletion modes: "Delete from geoportal", "Delete from geoserver" and "Delete from database" (Fig. 2.79). You can choose multiple options. To completely delete a layer, you need to select all 3 items. To confirm the

deletion, click 

, to cancel - 

.

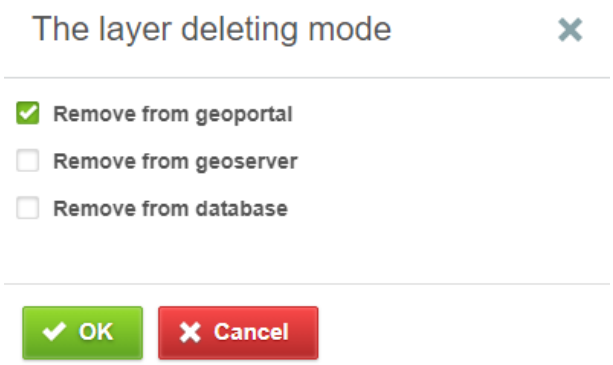


Fig. 2.79: Layer deletion confirmation

Layer Search

In the "Layers" tab, the user can work with the search bar and filters. There are filters by group, geometry type, layer type (raster/vector), service objects and clusters.

For example, when choosing the filter "By geometry type", a form will appear where you need to select one of the types (point, line, or polygon) from the drop-down list to filter out layers. After that, layers with the selected geometry type will be displayed in the administration area.

To clear the filtering results, click "Clear all".

Layer loading

To import a layer into the system, you need to click the 

button located at the top of the "Layers" tab. A pop-up window will appear, through which the user can choose a layer from computer. Archived shape-layers in zip format, as well as GeoTIFF files, are allowed for uploading. It is desirable to compress (lzw) the geotiff file and build pyramids for it. This can be done using the tools of the GDAL library (https://gdal.org/).

The stages of layer loading are displayed in the information window (Fig. 2.80).

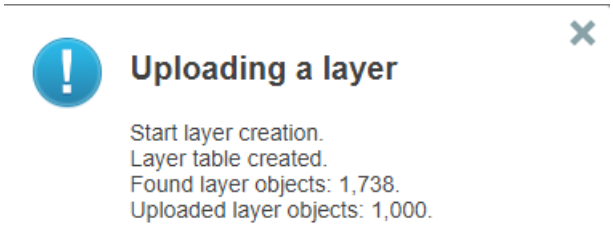


Fig. 2.80: Displaying layer loading stages

After loading, the same window will open as when creating a layer. The geometry type and layer display protocol will be automatically determined, while the remaining fields need to be filled in. Meanwhile, attributes (if any) are also set automatically. In addition, the user can independently select a data storage from the presented list in the “Main” tab.

“Tables” tab

The “Tables” tab contains information about the system’s tables and refrences (refrence tables).

Refrence tables and associated tables are used to solve the following tasks:

- Simplification of the process of filling attribute fields when working with objects (when connecting a refrence table or table with data, users will be able to select the value of the attribute field from the suggested variants, rather than entering it manually);
- Filtering layer objects on the map;
- Creation of thematic maps based on refrence tables;
- Applying style according to the refrence table.

When switching to the “Tables” tab, a table with the following columns becomes available (Fig. 2.81):

- “Title” - name of the table.
- “name in DB” - name of the table in the database (in Latin, by default, transliteration of the “Title” field).
- “Table type” (“Data table” or “Reference table”).

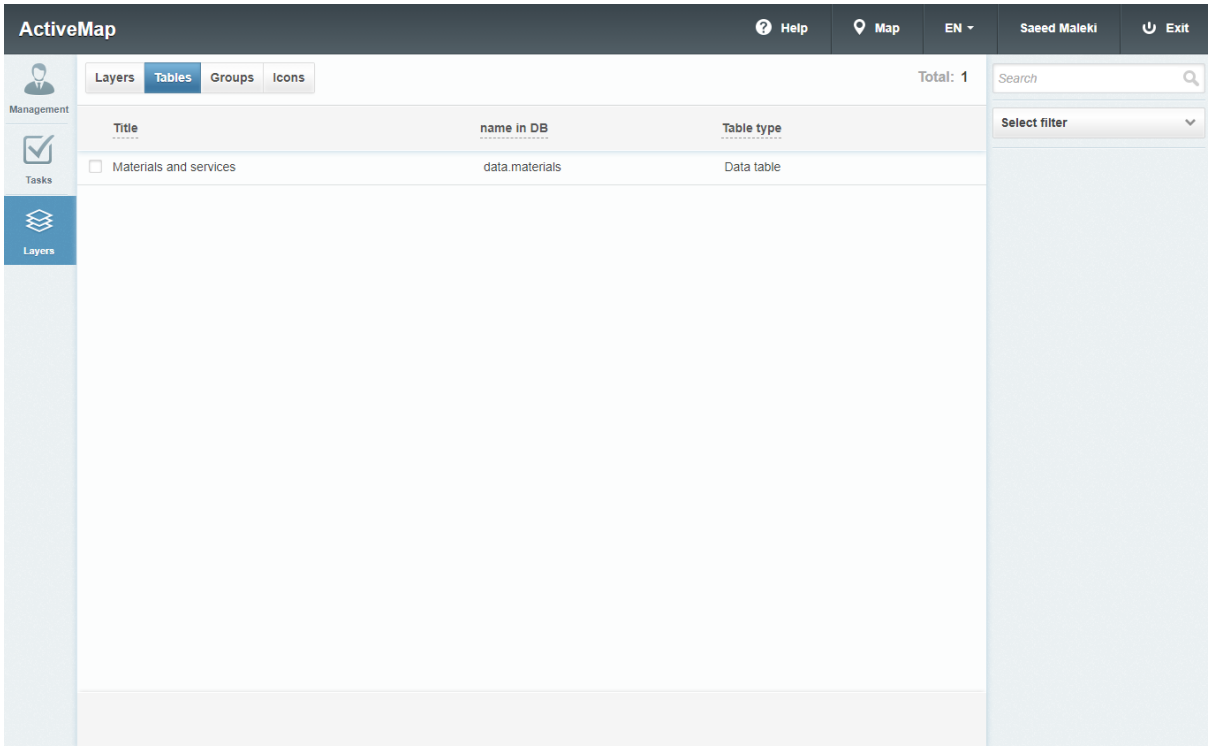
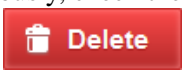


Fig. 2.81: “Tables” tab

Management of data tables and refrence tables is regulated by user rights.

To change a table, click  on the right side of the corresponding row. A window will open, similar to the table creation window, where you can modify or add data.

To delete a single table, click  on the right side of the corresponding row. To delete multiple tables simultaneously, check the boxes next to the corresponding rows and click the active button 

at the bottom of the screen.

“Groups” tab

When switching to the “Groups” tab, columns with the following headings appear (Fig. 2.82):

- “Ordinal number” - place in the list of layer groups on the main page of ActiveMap Web, occupied by the group;
- “System group” - whether the group is system (by default, the system group is the “User Monitoring” group containing system layers);
- “Name” - name of the group;
- “Layers” - number of layers in the group.

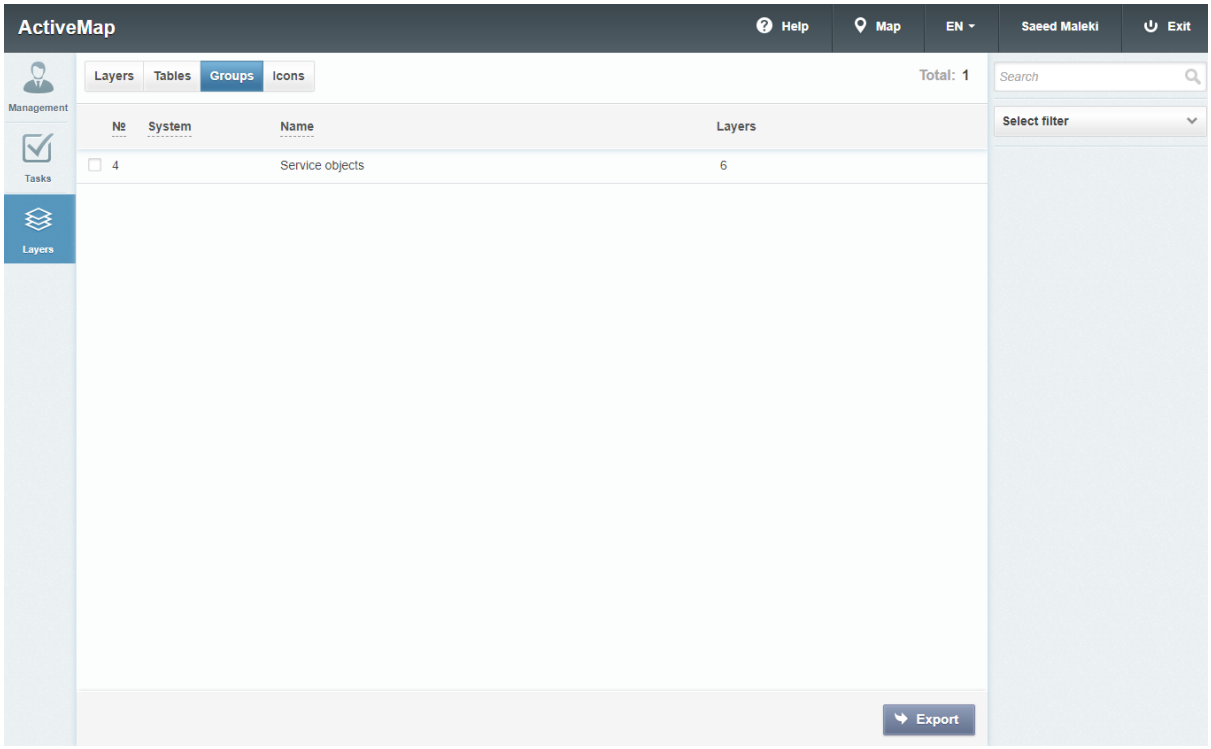


Fig. 2.82: “Groups” tab

In the “Groups” tab, you can use the search bar to search for groups by their name, as well as a filter by clusters.

“Icons” tab

The “Icons” tab displays a list of icon names and images (Fig. 2.83). Icons can be used when creating styles, as well as when adding clustering to point layers.

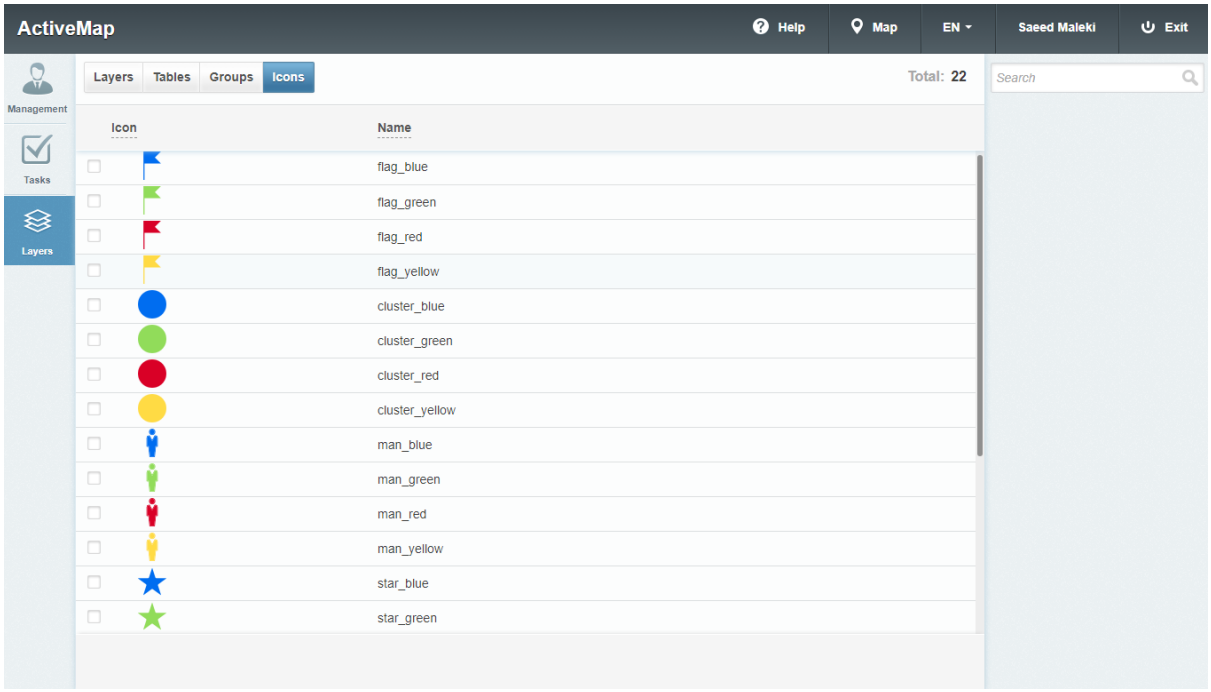


Fig. 2.83: “Icons” tab

You can use the search bar to find images by their names.

2.8 Completing the work

To log out of the ActiveMap Web user account, click on the “Exit” button located in the upper right corner of the page.

CHAPTER

THREE

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.

INDEX

T

U

V

W