ActiveMap Web user manual 3.47.0 (5.47)

Activemap Computer Systems Design

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ANNOTATION

This document is intended for the study of:

- Purpose of the ActiveMap Web software product (hereafter 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 Program;
- Functions executed by the Program, format and options for commands the user can carry out to load and control 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 the Program

The software product ActiveMap Web is a multifunctional software tool for the visualization of spatial data, publishing and displaying geo-information resources, developing custom web-based portal applications based on web technologies. The Program provides the possibility to publish basic cartographic layers, dynamically update specialized layers, satellite images.

ActiveMap Web ensures the collection and integration of disparate information, the visualization of created tasks with the 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 helps to plan and manage the production work and to operationalize quality control of field services.

Capabilities of ActiveMap:

- Flexible customization to meet the needs of the company.

You can adapt ActiveMap to any business process. A list of work types, steps and deadlines can be set up for each organization cluster.

- Adding tasks and controlling their execution.

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

- Object inventory.

ActiveMap helps to carry out an inventory of objects: update information on the status of existing objects, identify nonexistent, and to create new ones.

- Control of field employees.

The system helps to control employees with real-time tracking of their 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 immedi-

ately communicated to the field employee. The coordinator can also quickly return the task to the fieldworker for execution based on the results of the fieldwork.

- Using photo and video fixation materials and GPS data.

The system can verify that tasks were carried out using photos, video recordings, and location data. This avoids the necessity of field inspection of executed orders.

- User rights configuration.

The system enables the configuring of user rights. Each user is assigned a certain role. The role of the system user determines access to the list of tasks, rights to edit and manage these tasks. The roles vary from simple executors to the administrator of the entire system.

- Displaying service objects on a map.

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

- Creating electronic documents.

The system allows users 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, allowing it to run from any personal computer with Internet access. To organize the dispatcher's workplace, a personal computer with technical specifications that meet the following minimum requirements is needed:

- Processor: Intel Core i5;
- Operating system: Windows 10;
- Internet access speed of at least 10 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) and enter the address of the web page of the Program in the address bar. The start window (Fig. 2.1) appears.

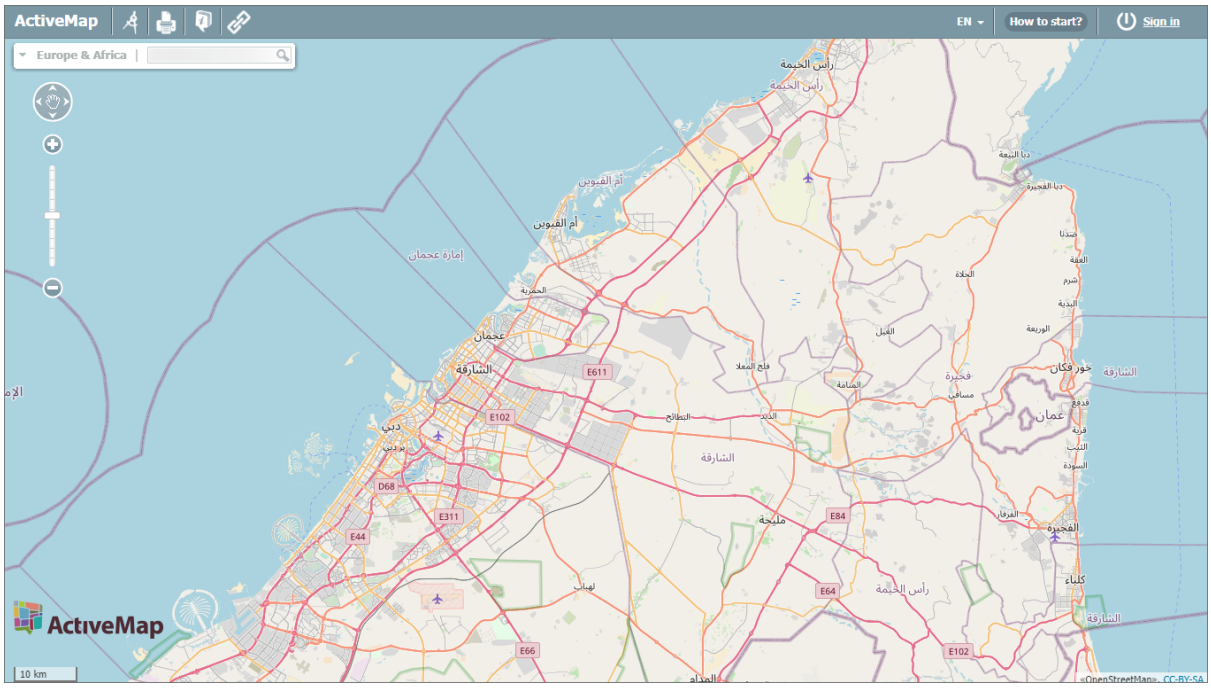


Fig. 2.1: Start window

To log into 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). Depending on the system settings, the authorization window may include the “Save password” option. It allows you to quickly log in during subsequent sessions.

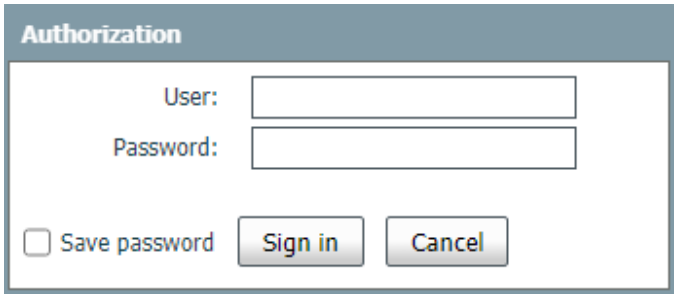


Fig. 2.2: Authorization window

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).

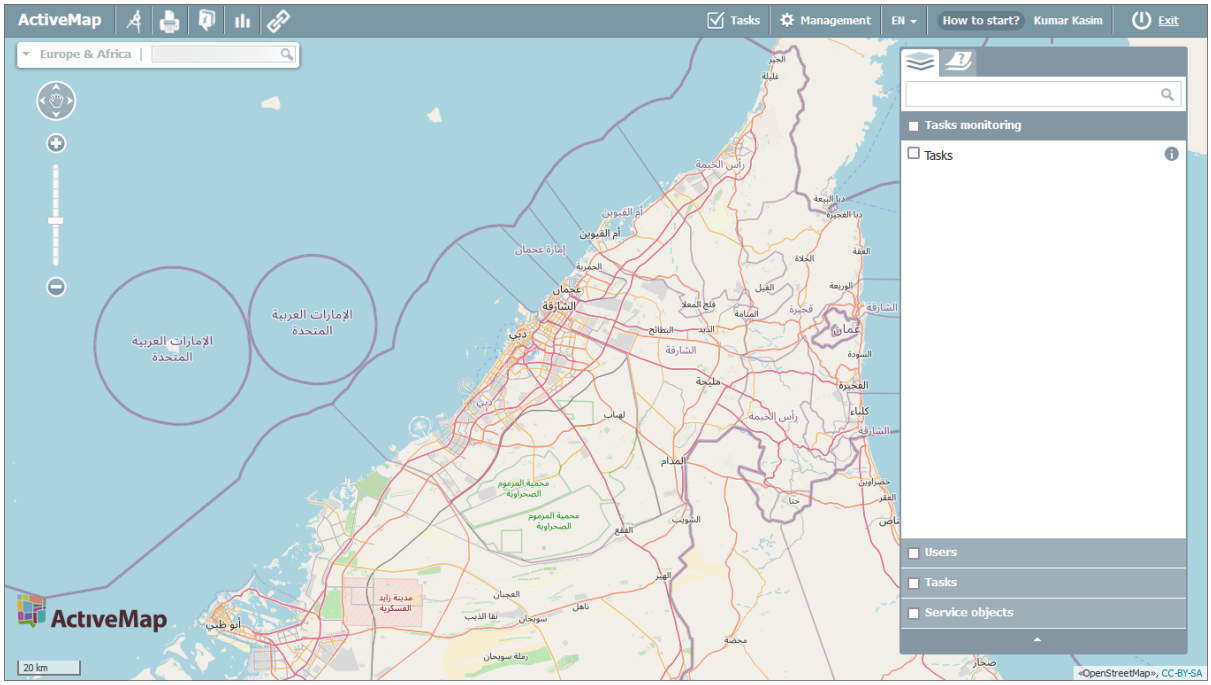


Fig. 2.3: Start page

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

- The **"System Administrator"** is responsible for the system configuration, including the management of clusters, organizations, users of all roles, contracts, directories, and for the distribution of access rights to the different layers and reports.
- The **"System Inspector"** manages the tasks of all clusters.
- The **"Cluster Administrator"** is responsible for administration of one or more specified clusters, namely: managing organizations and users, granting access rights to layers and reports, and managing tasks.
- The **"Cluster Inspector"** manages the tasks of one or more specified clusters.

- The **“Organization Administrator”** is responsible for administering the organization, namely: creating users, granting access rights to layers and reports within the organization, and managing tasks of the organization.
- The **“Organization Inspector”** manages the tasks of the organization.
- The **“Executor”** creates new tasks and executes the assigned tasks in the System.

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

2.2 User interface

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

1. Map displaying 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

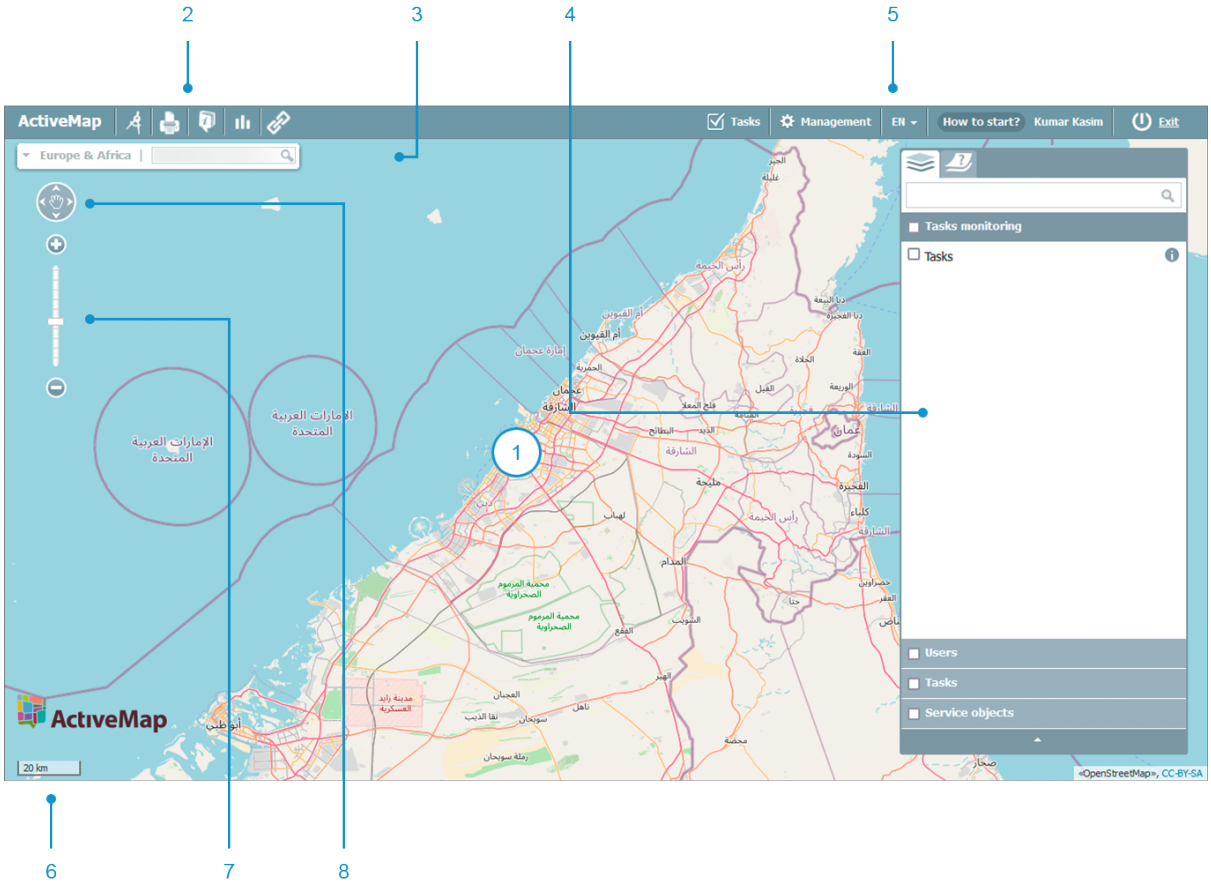


Fig. 2.4: Elements of the main window

2.3 Selecting basemap

The basemap (map base layer) is the main layer 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 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. The left part of the panel contains the names of basemaps with schematic maps, while the right part shows basemaps with satellite imagery. To switch from a schematic map to satellite imagery, click the name of the basemap with satellite imagery (Fig. 2.6).

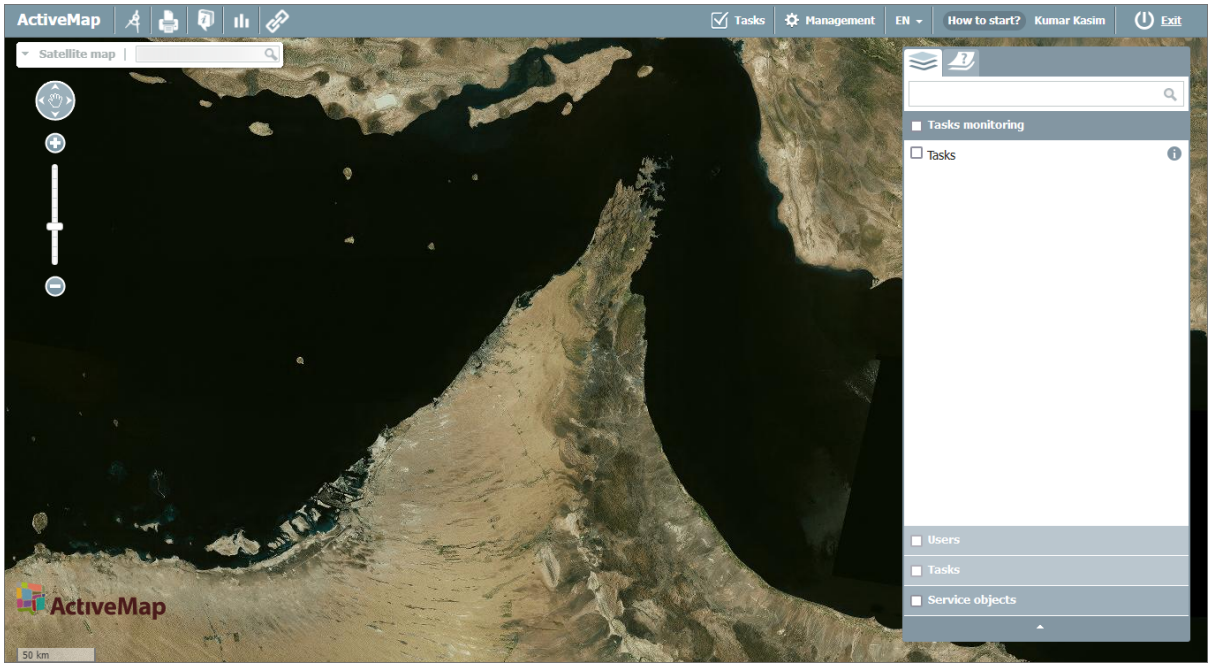


Fig. 2.6: Basemap with satellite imagery

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

The system supports the selection of several basemaps of the same type. If there are several basemaps of the same type, an arrow next to the basemap name appears and opens a drop-down list with the names of other basemaps (Fig. 2.7).

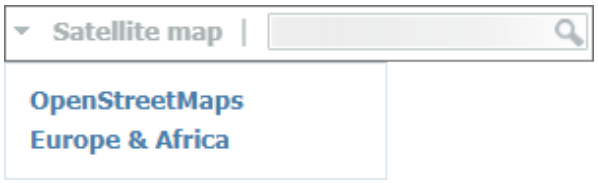


Fig. 2.7: List of base layers with schematic maps

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. To search for a street enter the name of the city, street, or the name of the street. To search for a house enter 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 or pressing “Enter” on the left side of the screen, a window with found objects appears on the information panel. Click the line with the found object to select it.

The map moves to its location, where a list of found objects is presented. To display search results on the map, click the desired option in the “Search results” window. The found object is located in the center of the screen and marked with a contrasting icon (Fig. 2.9).

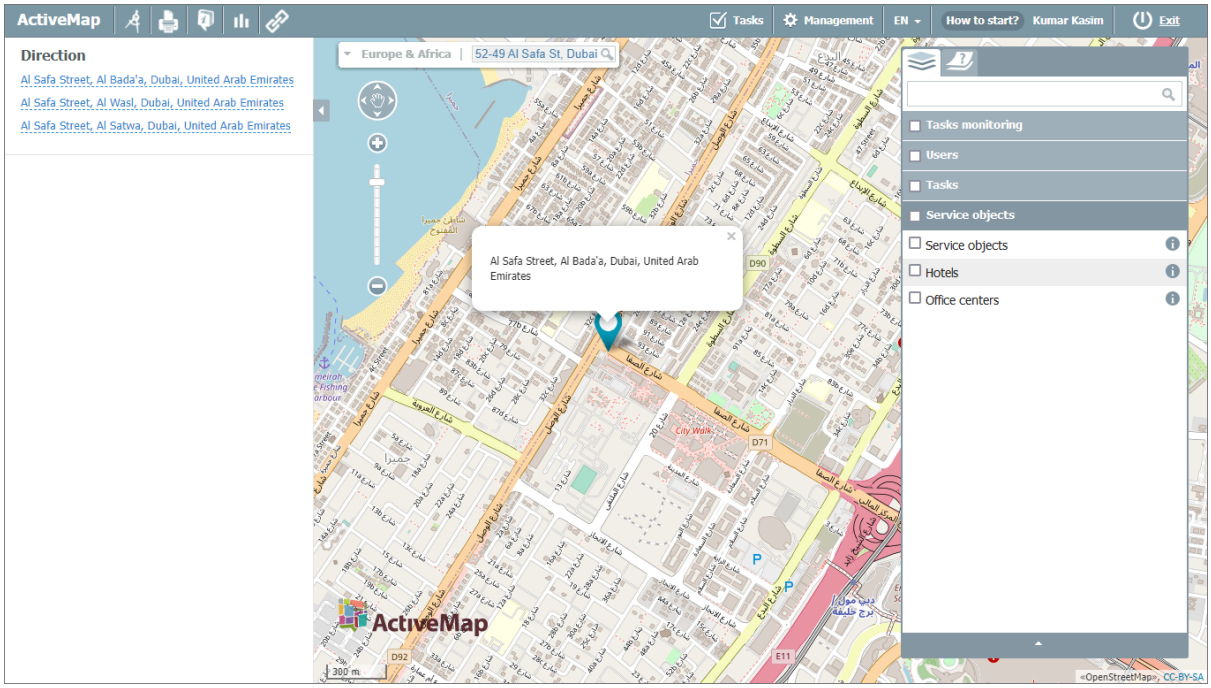


Fig. 2.9: Object search results in the list and on the map

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).

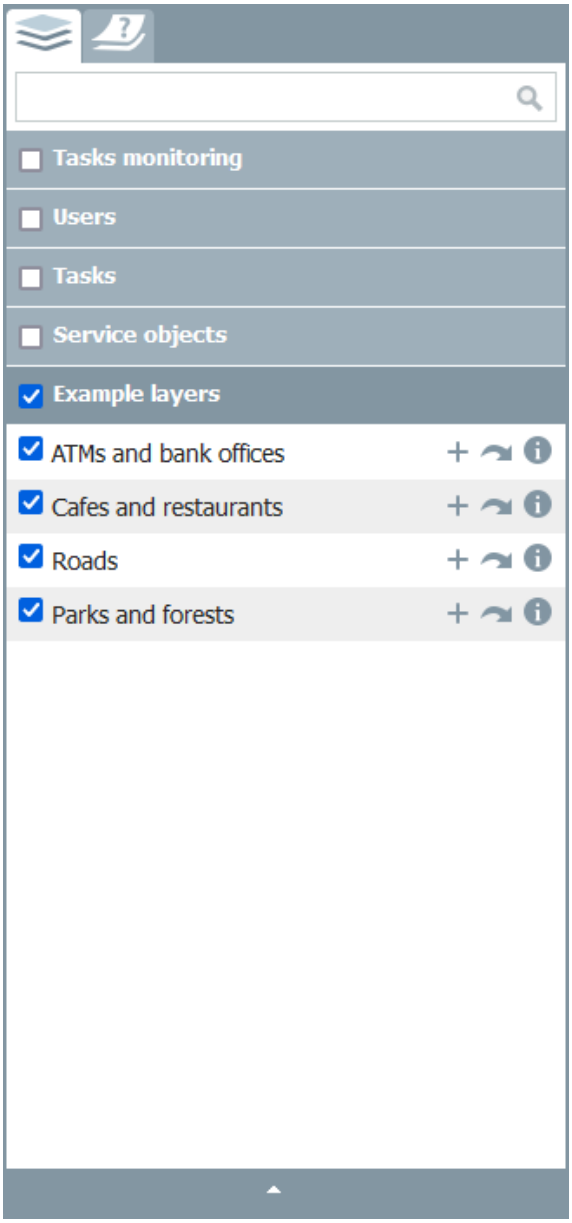


Fig. 2.10: “Layers” tab of the Layer control panel

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

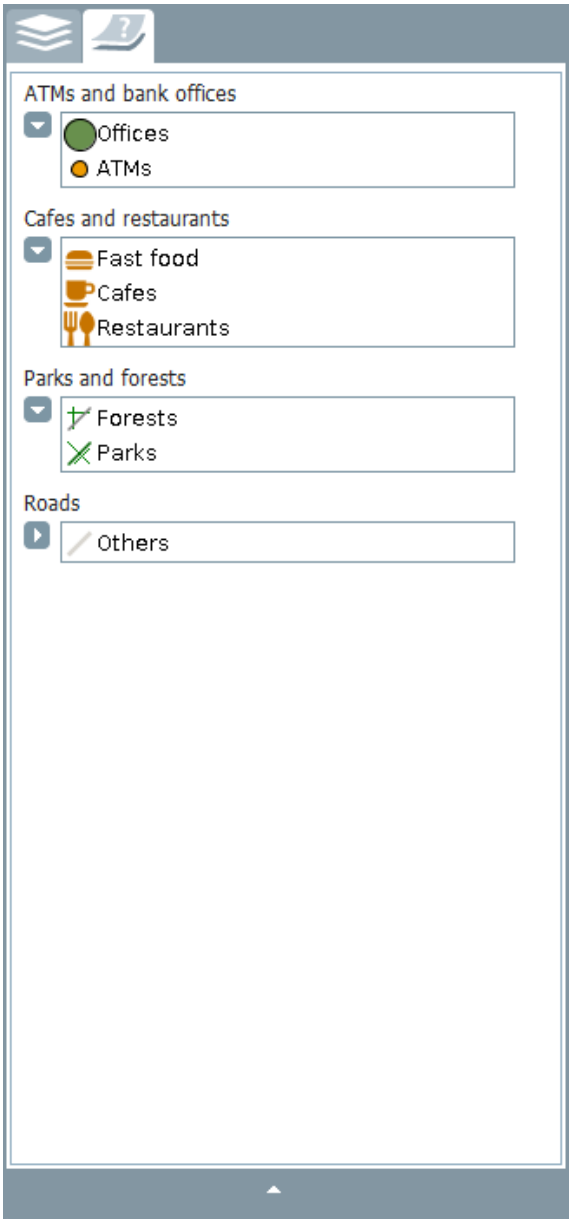


Fig. 2.11: "Legend" tab of the Layer control panel

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

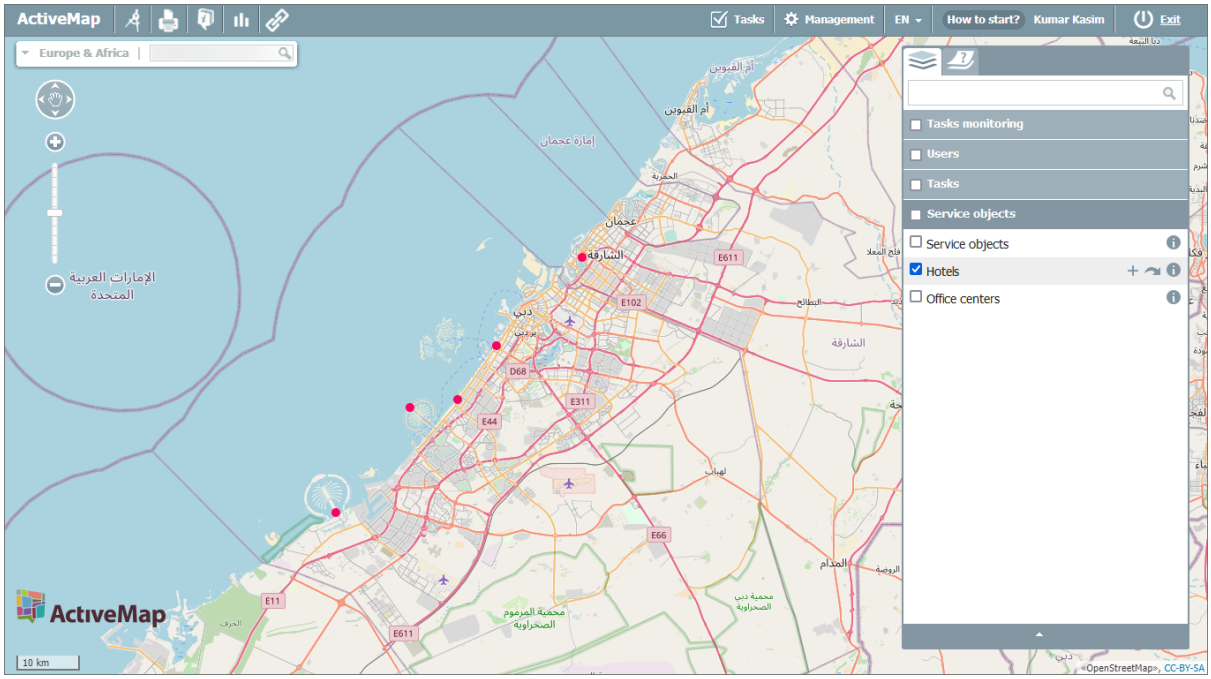


Fig. 2.12: Displaying the selected layer on the map

Clicking 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.

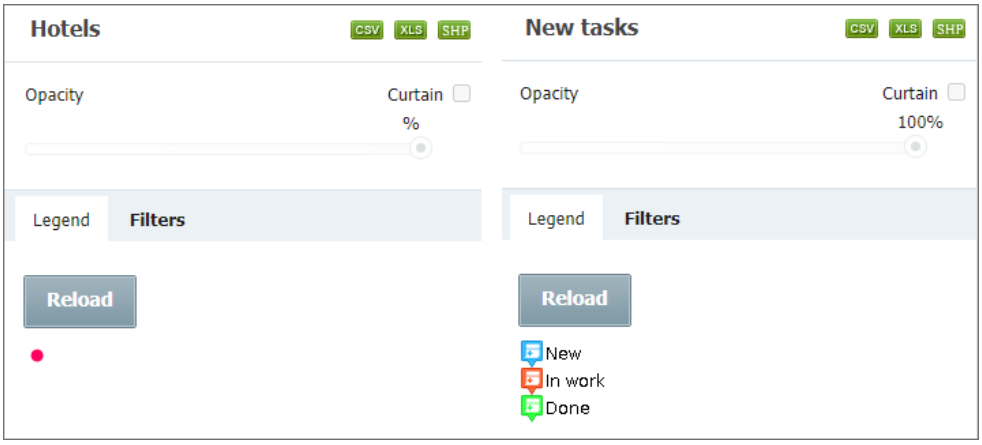


Fig. 2.13: Examples of legends for different layer types and styles

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

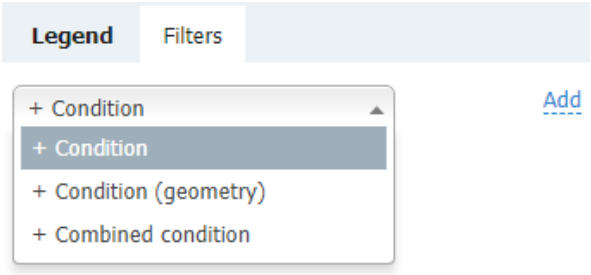


Fig. 2.14: Filter types

You can filter by layer attributes (“Condition” parameter) and 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).

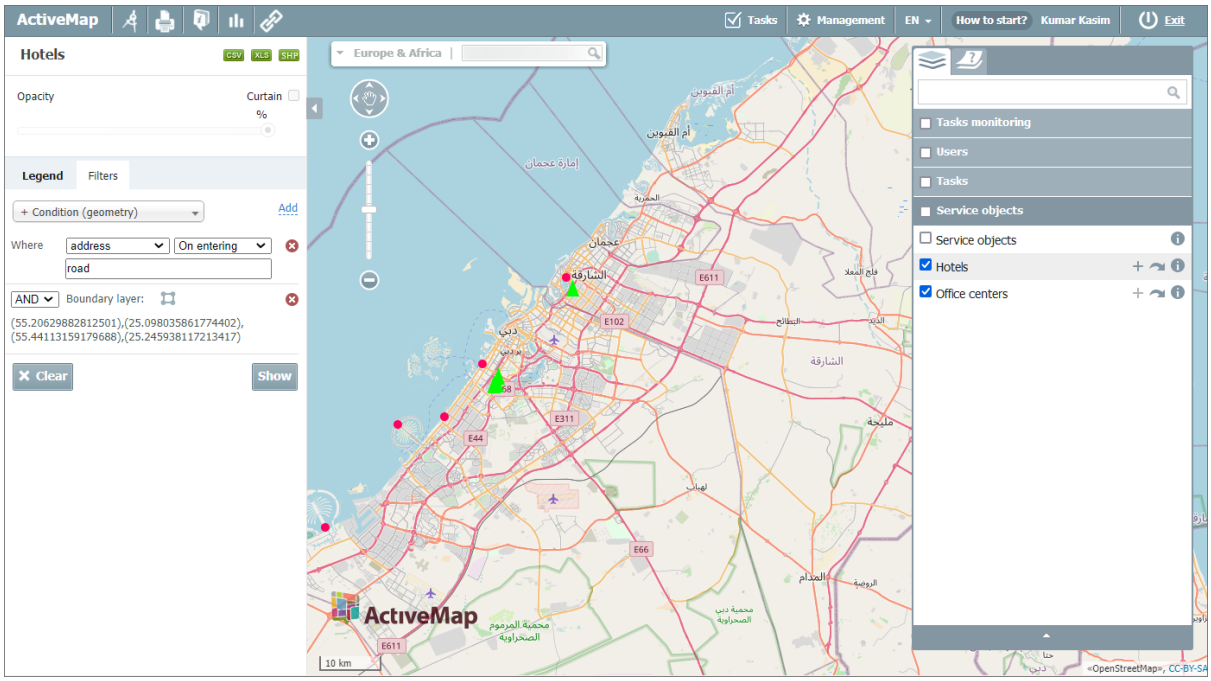


Fig. 2.15: Applying a combined filter by name and geometry

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 appears. If a reference table (dictionary) is attached to the attribute field selected for filtering, a field with a drop-down list of possible values appears instead of the attribute value entry field.

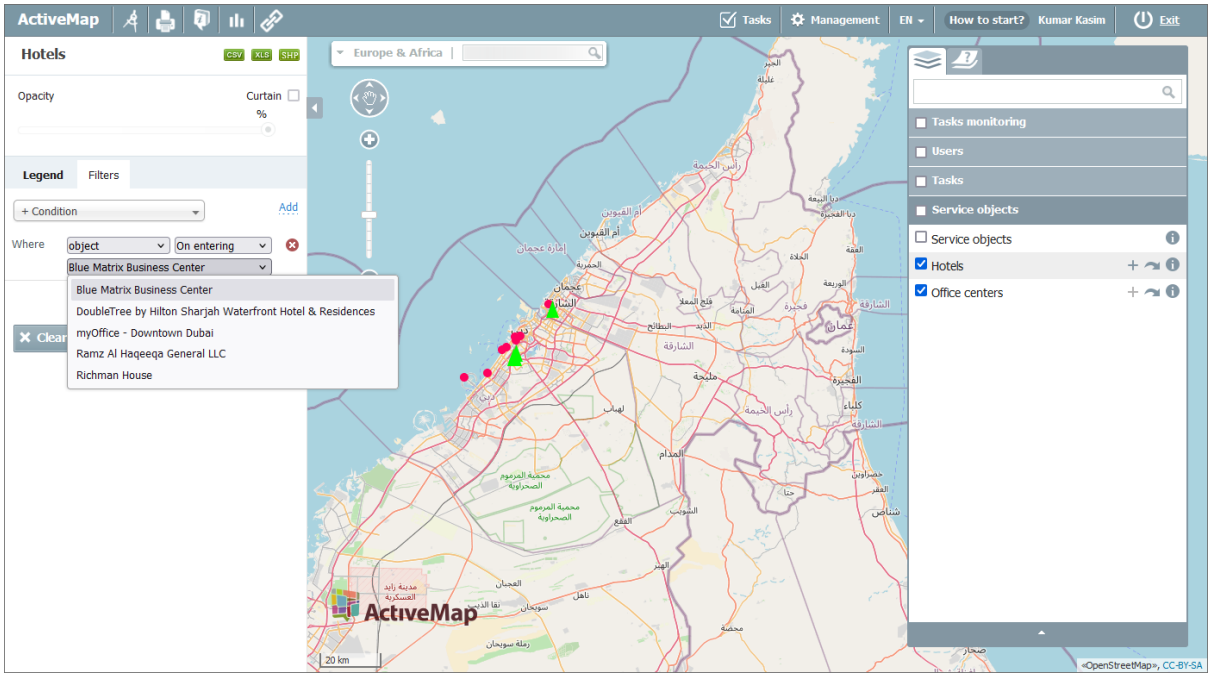


Fig. 2.16: Using a reference table for filtering objects

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 you to hide part of the active layer in the map window. The cursor controls the vertical curtain. By moving the cursor in the map window (left/right), the 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, clear the “Curtain” checkbox (Fig. 2.17).

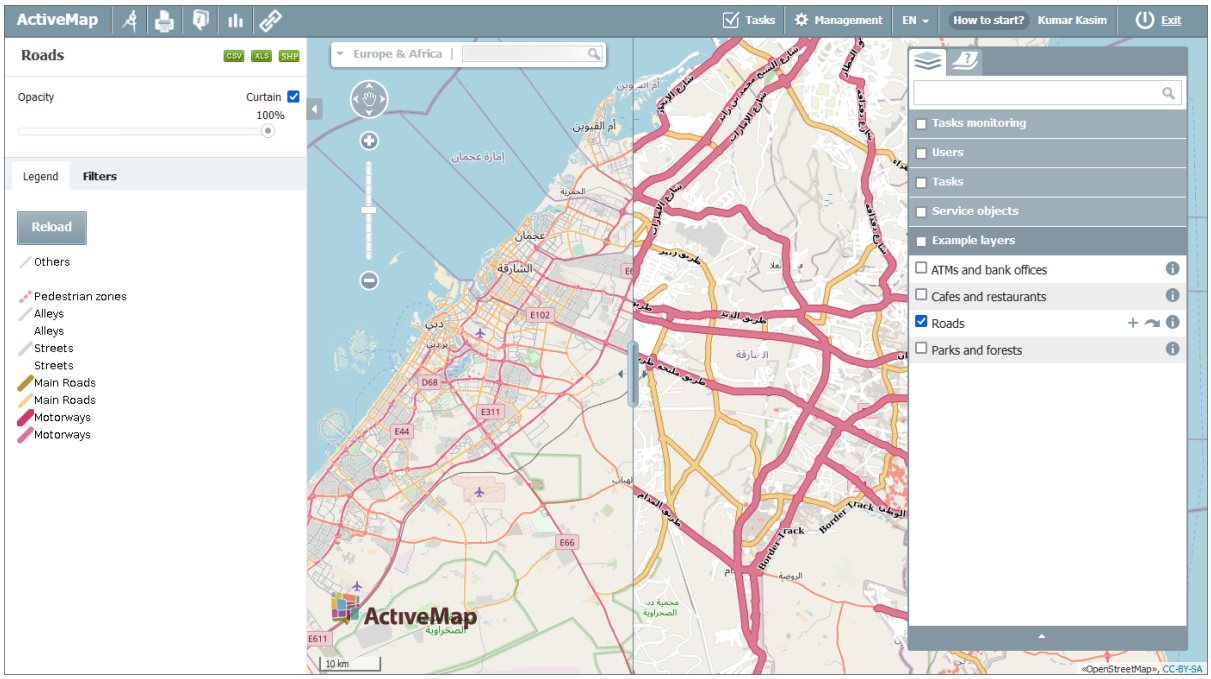


Fig. 2.17: “Curtain” tool

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 each thematic layer name there is a layer visibility checkbox. Select the checkbox to enable layer visibility (Fig. 2.18).

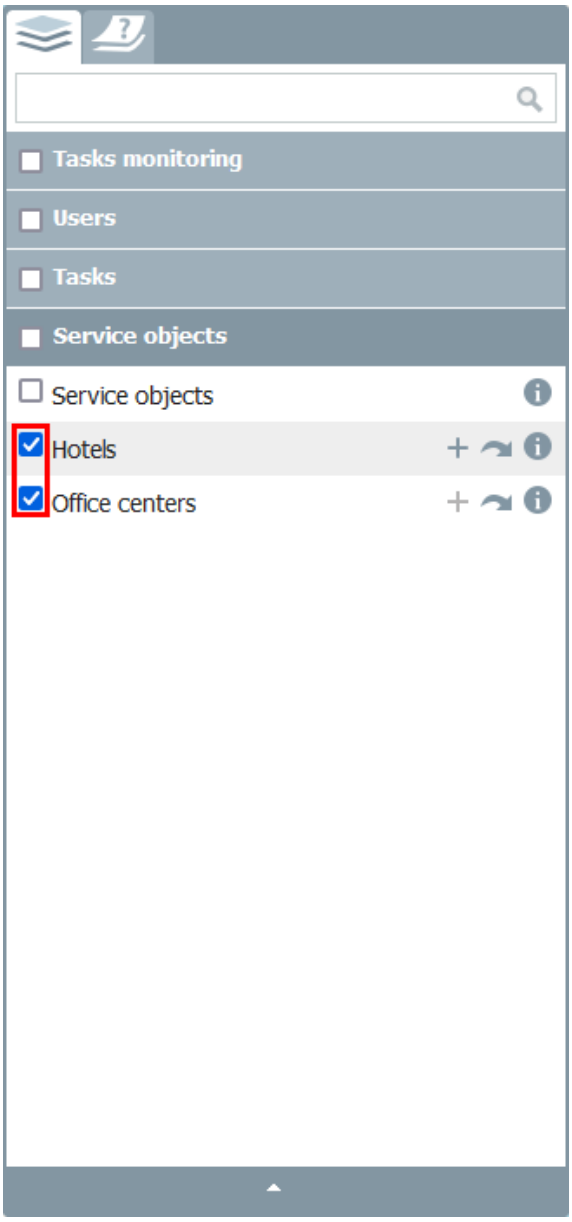


Fig. 2.18: Enabling layer visibility

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).

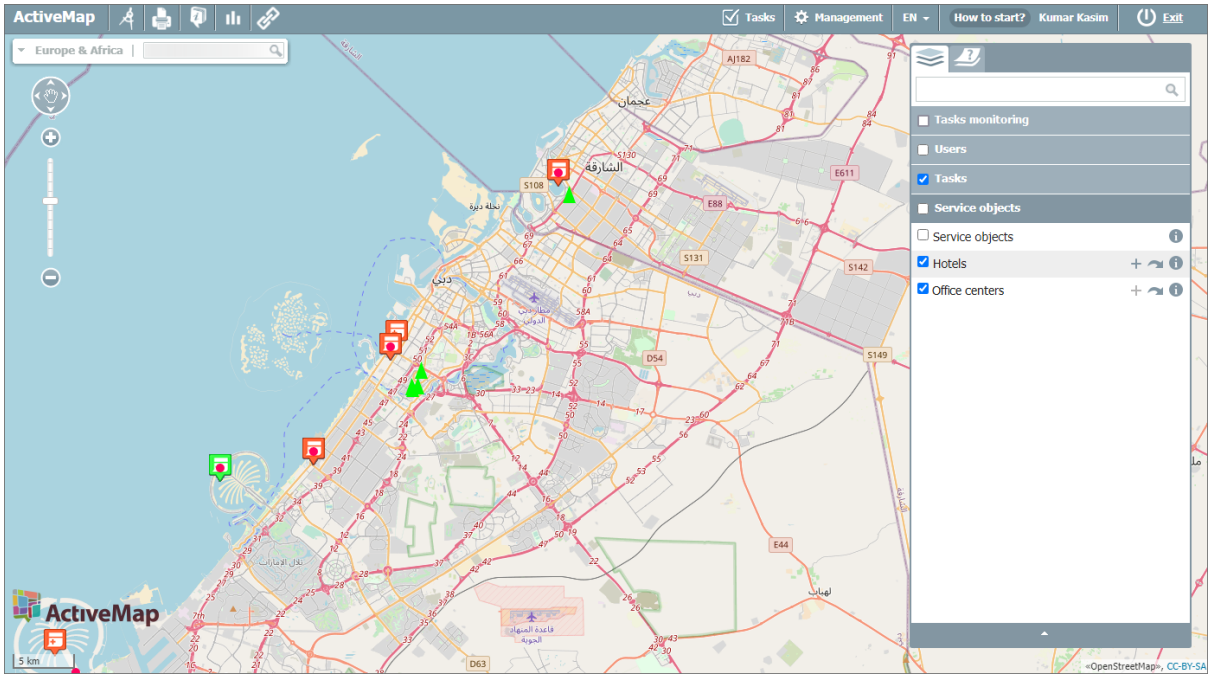


Fig. 2.19: Displaying selected layers on the map

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

You can switch on all the layers of the selected group in one action, by selecting the visibility checkbox of the group. Ticks in the visibility checkboxes of each layer of the selected group appear automatically (Fig. 2.20).

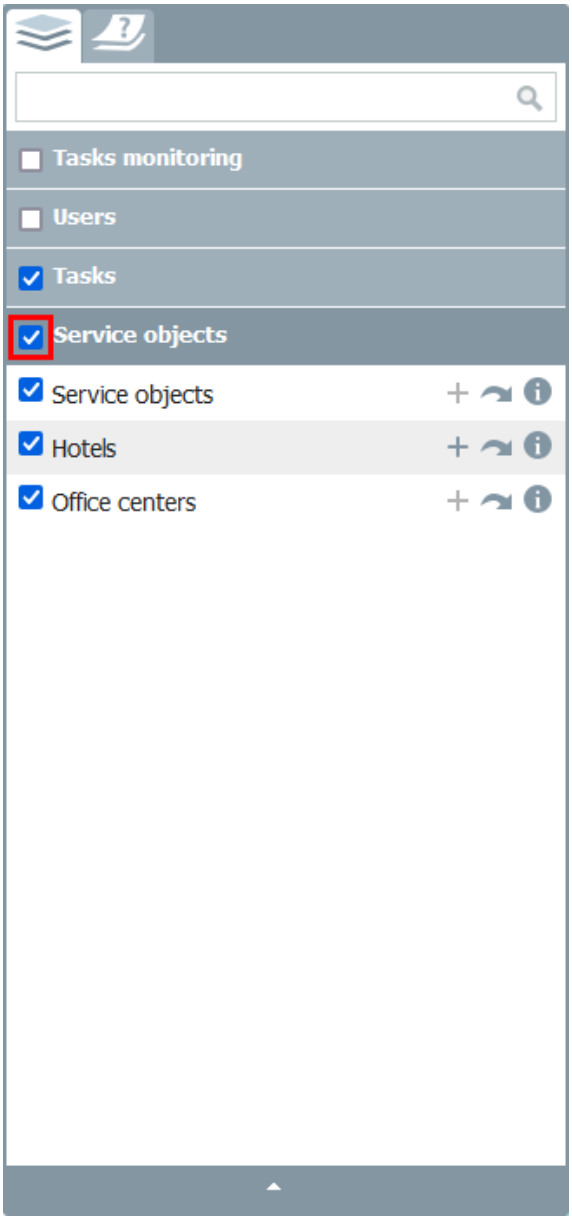


Fig. 2.20: Enable visibility of the layer group

All layers of the selected group are displayed on the map, where each layer lower on the group layer list is displayed on top of the layer higher on the list.

Clearing each tick in the layer visibility checkboxes hides the corresponding layer on the map. Removing a tick in the checkbox of the group hides the whole group of layers.

2.5.2 Obtaining attribute information for layer objects

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

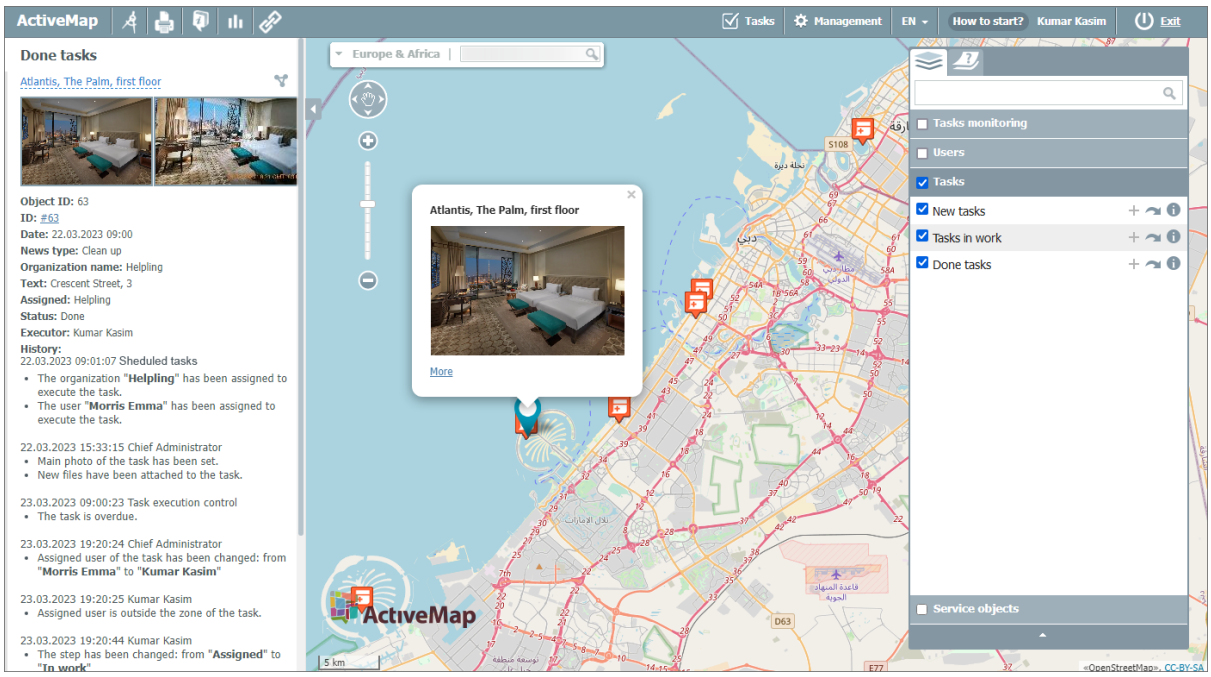


Fig. 2.21: Window and sidebar with information about the object

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).

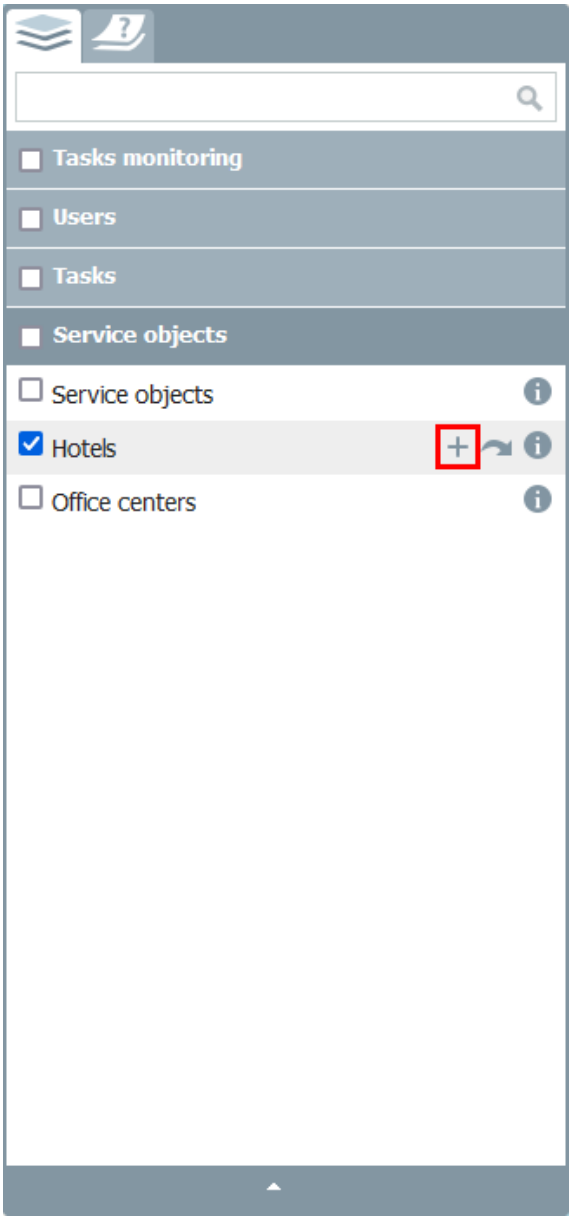


Fig. 2.22: Button for adding an object on the layers panel

The “New object” window opens (Fig. 2.23), specifying the type of geometry of the added object. To create a point object, click on the object’s location on the map. To create a linear or polygonal object, click at the line or polygon edge nodes.

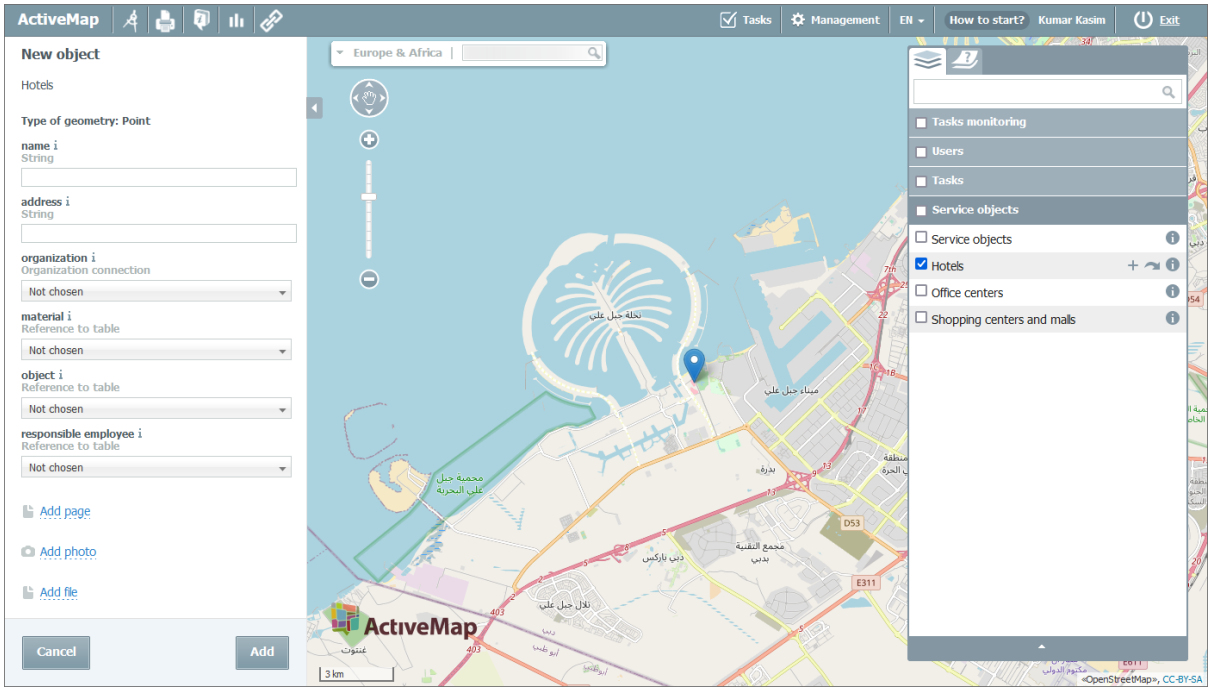


Fig. 2.23: Adding a new point object

After creating the object geometry, fill in the attributive fields. Clicking on the "i" to the right of the field name opens a tooltip indicating the type of data to be entered (Fig. 2.24).

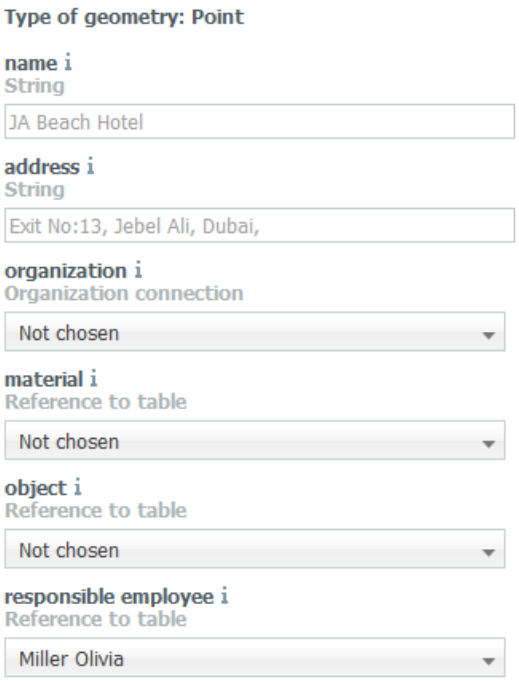


Fig. 2.24: Filling in attribute fields

There are the following types of attribute fields:

- String – a text field;
- Integer – an integer field;

- Big integer – a numeric type that makes it possible to work with integers of arbitrary length;
- Boolean – a choice of true and false;
- Float – a field with a real numeric value;
- Date – selection of date from the calendar (day-month-year);
- Date and time – selection of date (day-month-year) and time (hours-minutes);
- Dictionary – selection from a list of values from the specified reference table (dictionary);
- Data table – selection from a list of values from the specified data table;
- Layers – selection from a list of objects from the specified layer;
- Organization connection – selection from a list of available organizations;
- Cluster connection – selection from a list of available clusters;
- User connection – selection from a list of available users;
- Work type connection – selection from a list of available work types;
- Priority connection – selection from a list of available work priorities.
- RFID tag – a text field for storing information obtained by scanning the tag in the ActiveMap Mobile Android mobile application.

You can attach photos or other files to the task. To complete the creation of the object, click the "Add" button. An information message about the successful addition of the object appears (Fig. 2.25), the created object is displayed on the map.

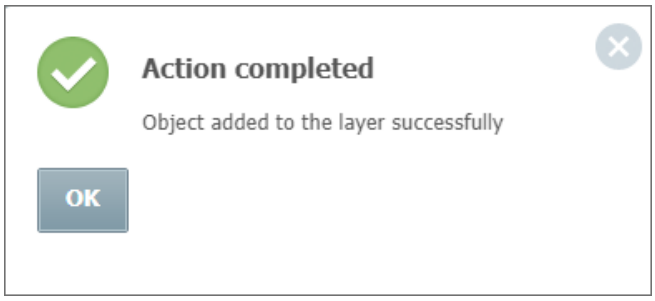


Fig. 2.25: Message about the successful addition of the object

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 the "Details" button, then click the button. In the opened panel, you can change the information in the attribute fields and add photos or other types of files. After making changes, click "Save". An information message about the successful object modification appears (Fig. 2.26).

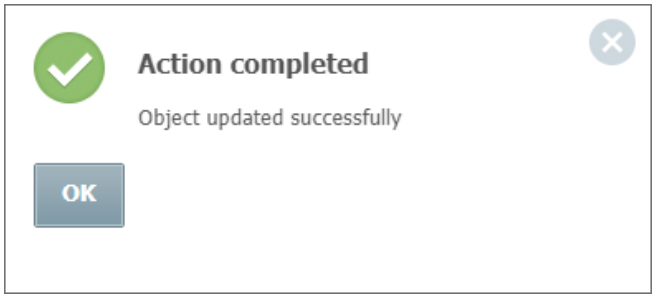


Fig. 2.26: Message about the successful modification of the object

When pressing the button, the selected object is removed from the map. An information message about the successful deletion of the object appears (Fig. 2.27).

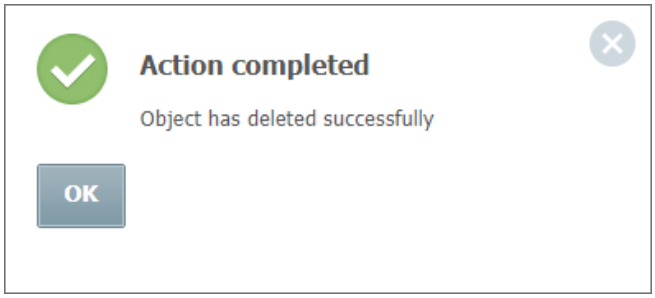


Fig. 2.27: Message about the successful deletion of the object

2.5.5 System layers

The layers panel may contain layers automatically created by the system. Usually there are two layers: “Users” (from the “Users” group) and “Tasks” (from the “Tasks monitoring” group).

You cannot add new objects or edit existing ones in the system layers. Only the System Administrator can edit the display settings for system layers in the management module. Other roles, if they have rights to this layer, can only grant permissions to other users within their cluster or organization.

In the “Tasks” layer, tasks with coordinates are displayed on the map using clustering. The icon color depends on the current task status (Fig. 2.28):

- In Progress – blue;
- Completed – green;
- Rejected – gray.

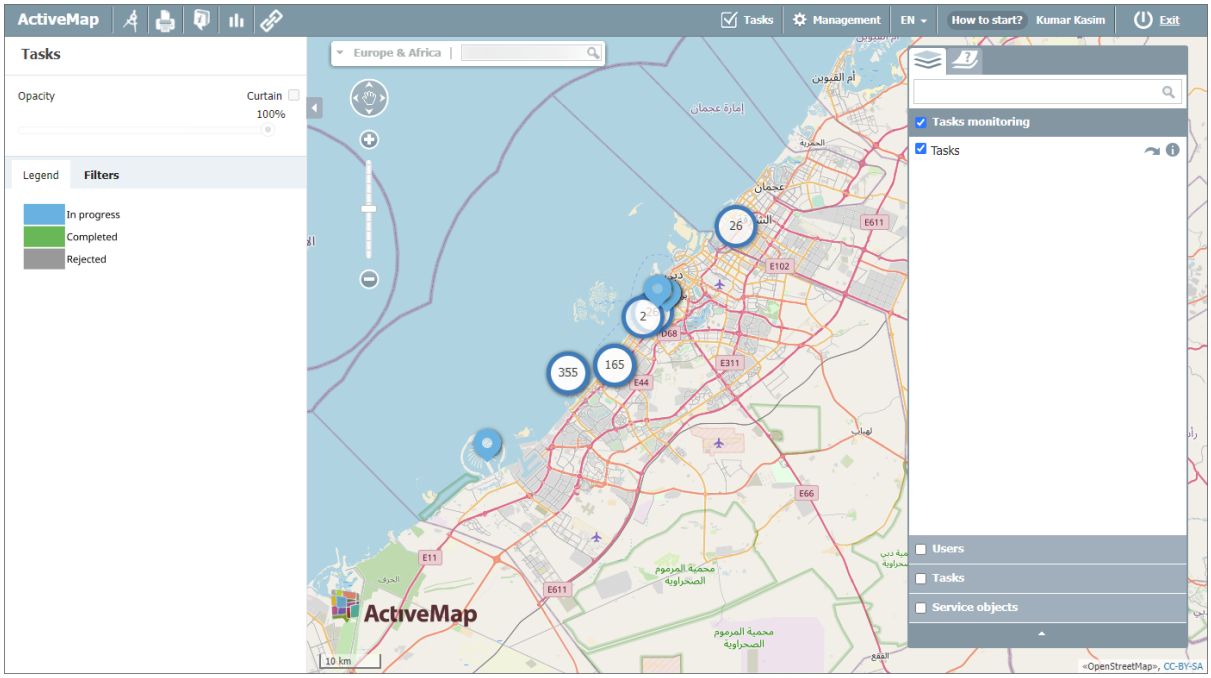


Fig. 2.28: Displaying the “Tasks” system layer on the map

In the “Filters” tab, you can select tasks by the following parameters (Fig. 2.29):

- Date of create,
- Date of update,
- Deadline,
- Tasks were expired,
- Organization,
- Type of work,
- Priority,
- Status,
- Step,
- Assigned organization,
- Executor.

Clicking on the task icon displays information on the following fields (Fig. 2.29):

- Id,
- Title,
- Status,
- Step,
- Deadline,
- Type of work,
- Priority,

- Assigned organization,
- Executor.

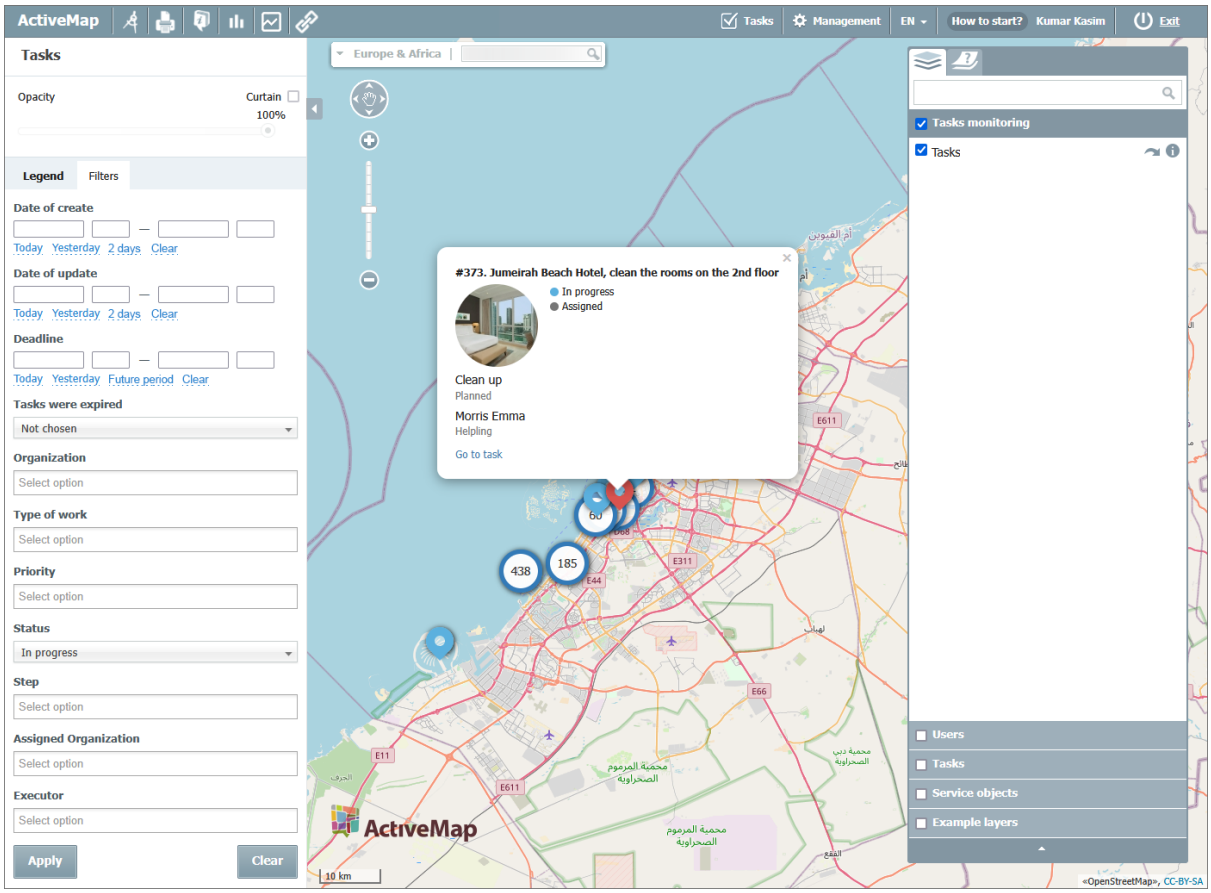


Fig. 2.29: Filtering parameters and information in the task card

Clicking “Go to task” opens a page in the tasks module with the card of the selected task (Fig. 2.30).

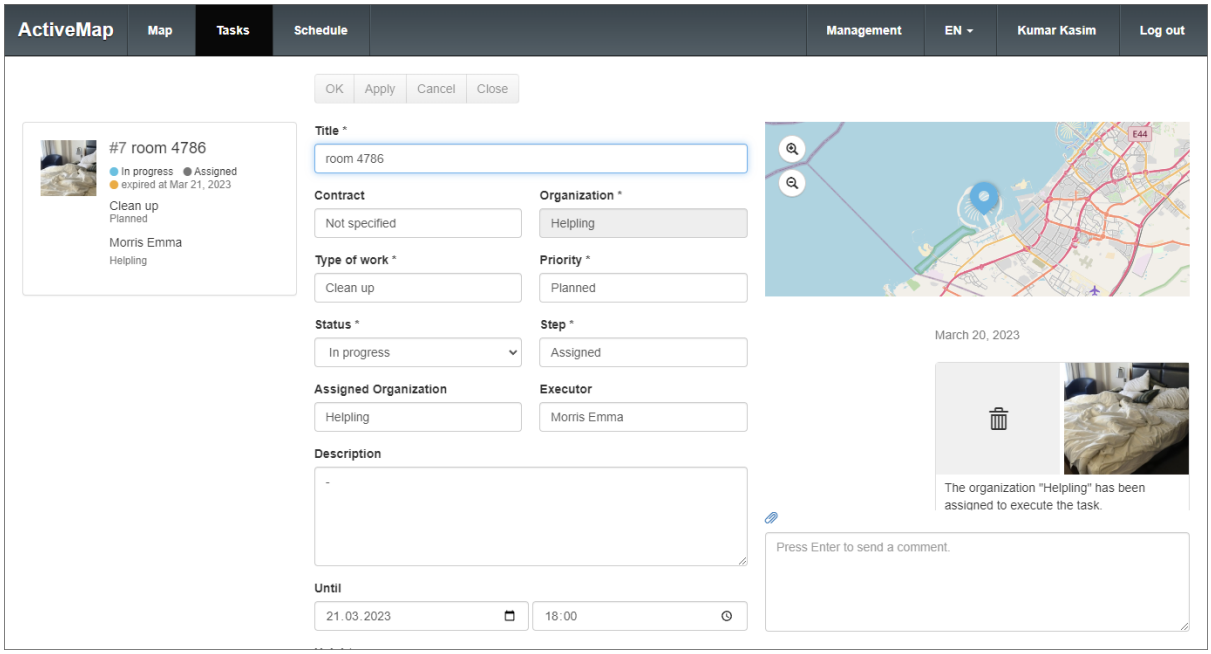


Fig. 2.30: Opening task in the task module

Geographical data for the “Users” layer is taken from the coordinates of users of the ActiveMap mobile applications. The number of users displayed on the map depends on the rights of the current user.

User icons are colored according to the activity interval — the time when the system last received their coordinates:

- Active – coordinates received at least 15 minutes ago (green icon).
- More than 15 minutes ago – coordinates received from 15 to 60 minutes ago (yellow icon).
- More than 1 hour ago – coordinates received more than an hour ago (red icon).
- More than 1 day ago – coordinates received more than a day ago (gray icon).

You can see this on the map and in the layer legend (Fig. 2.31). The same tab displays statistics on user activity.

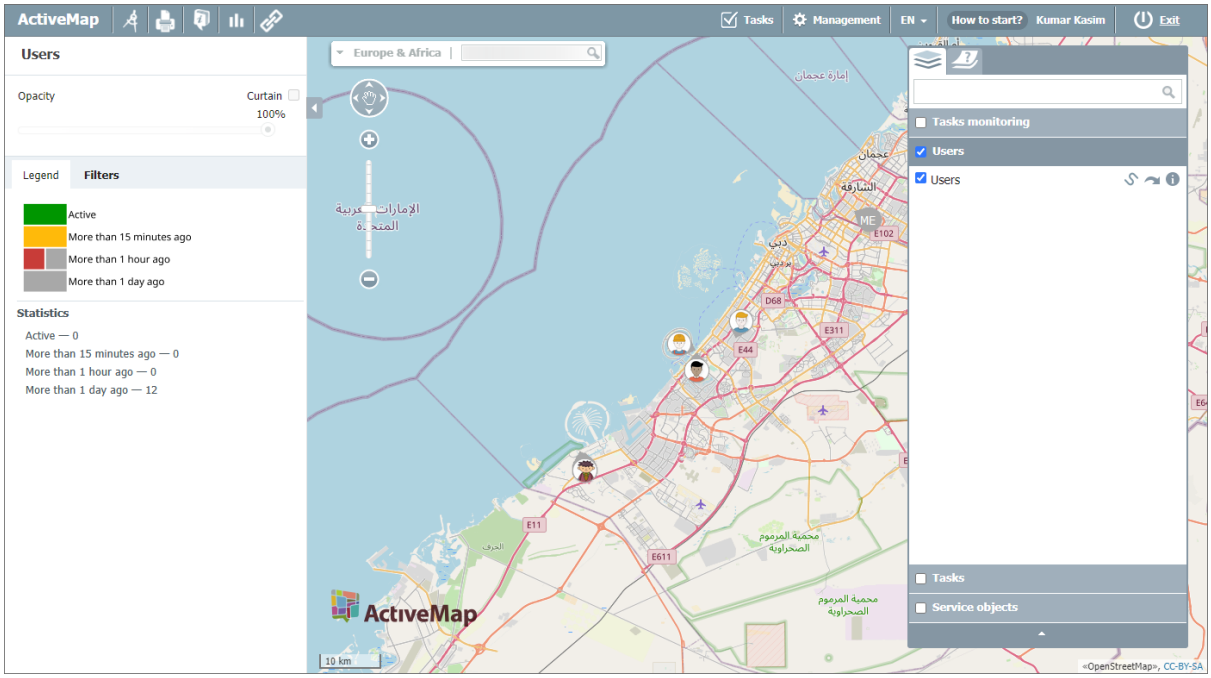


Fig. 2.31: Displaying the “Users” system layer on the map

In the “Filters” tab, you can select tasks by the following parameters (Fig. 2.32):

- Activity,
- Main organization,
- User types,
- User tags.

Clicking on a user icon displays a card with the following information (Fig. 2.32):

- User name,
- Last login time,
- Speed,
- Battery level,
- Tags.

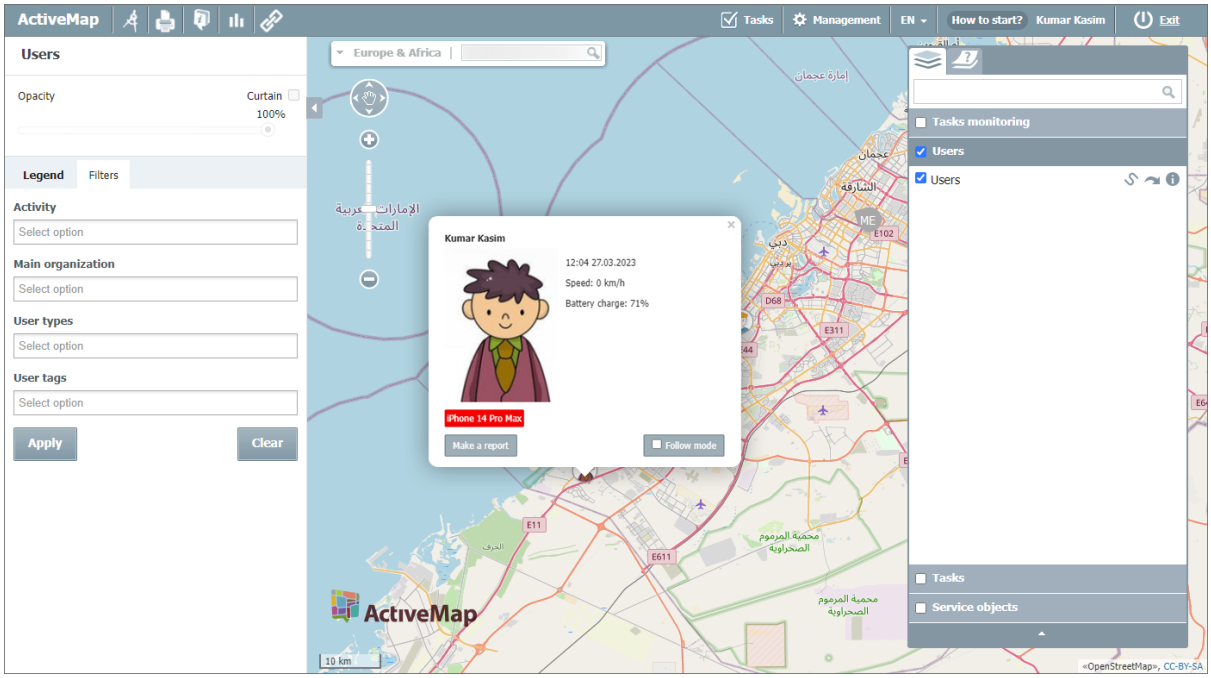


Fig. 2.32: Filtering parameters and information in the user card

In this window you can generate a report on the user's movements for a period of up to one week and enable tracking of the user's movements on the map in real-time. You can also access the user movement report form by clicking on the icon to the right of the layer name in the layer panel. After selecting the user's name and the period, click the "Create" button. The route points are displayed on the properties panel and on the map, indicating the time of sending coordinates and the distance between the points.

2.6 Toolbar

The Program toolbar consists of the following buttons (Fig. 2.33):

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

Fig. 2.33: Toolbar

– "Measure the distance" button is used to measure distances between two or more

objects on the map.

To measure the distance, click the button, move the cursor to the measurement start point and click the left mouse button. Then move the cursor to another point and then click the left mouse button again. 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, the vertex entry stops, the last vertex is removed from the map, and the measured distance is displayed on the screen (Fig. 2.34).

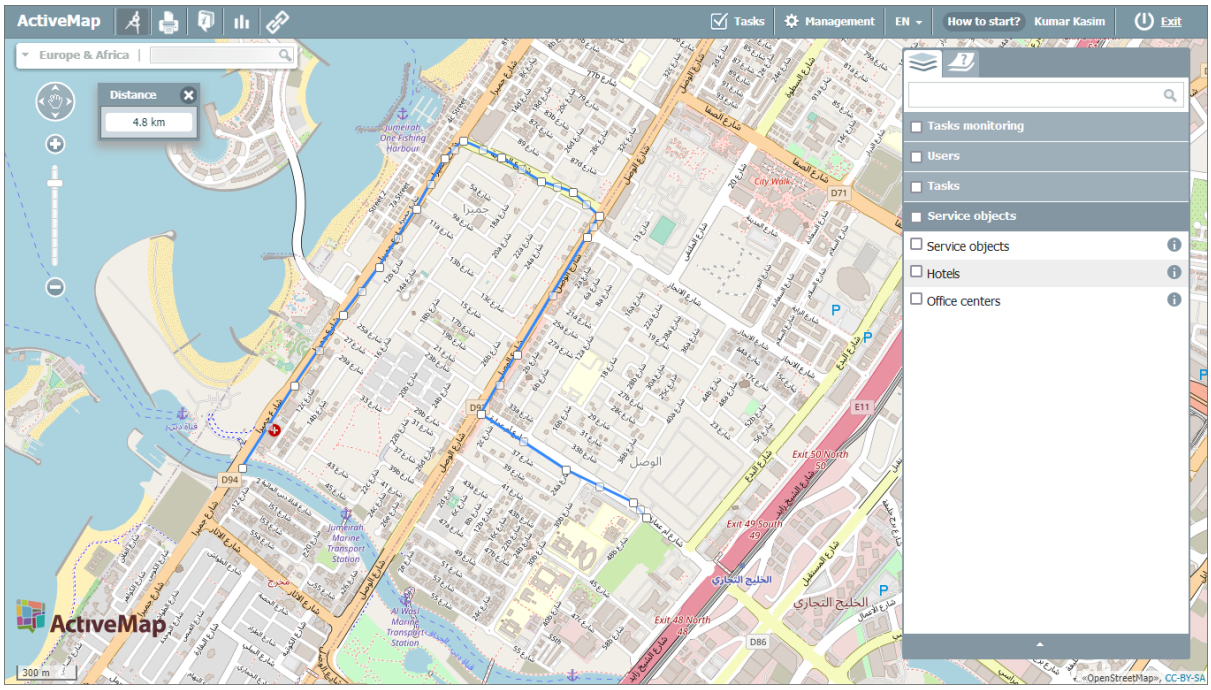


Fig. 2.34: Measuring distances on the map

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

– the “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. You can add a comment, which is saved in the printed version (Fig. 2.35).

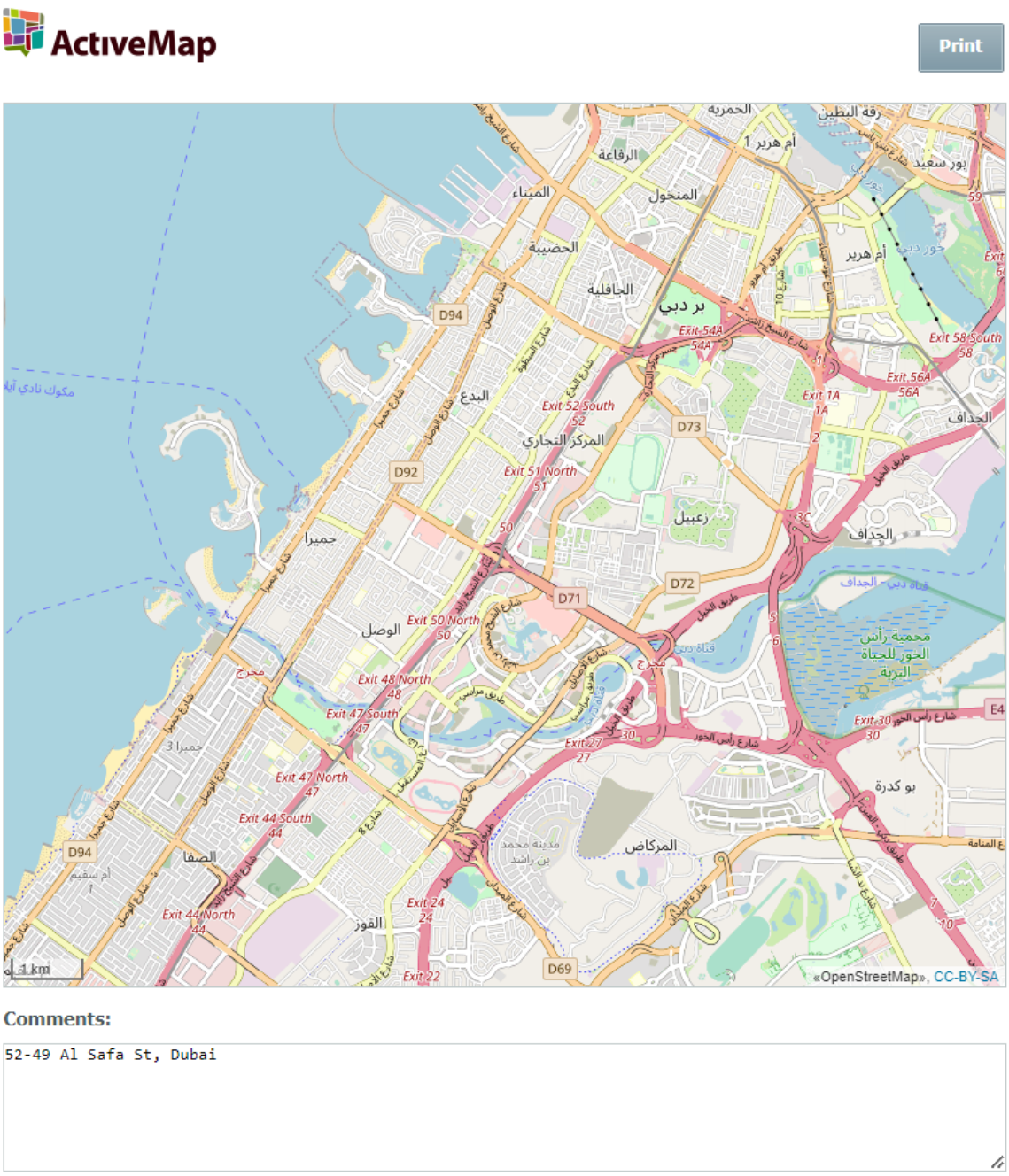


Fig. 2.35: Visible map area window for printing

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

After clicking the “Print” button, the print wizard window appears (Fig. 2.36). Select one of the installed printers, enter the number of copies, select page orientation, page range for printing, and color mode (color or black-and-white).

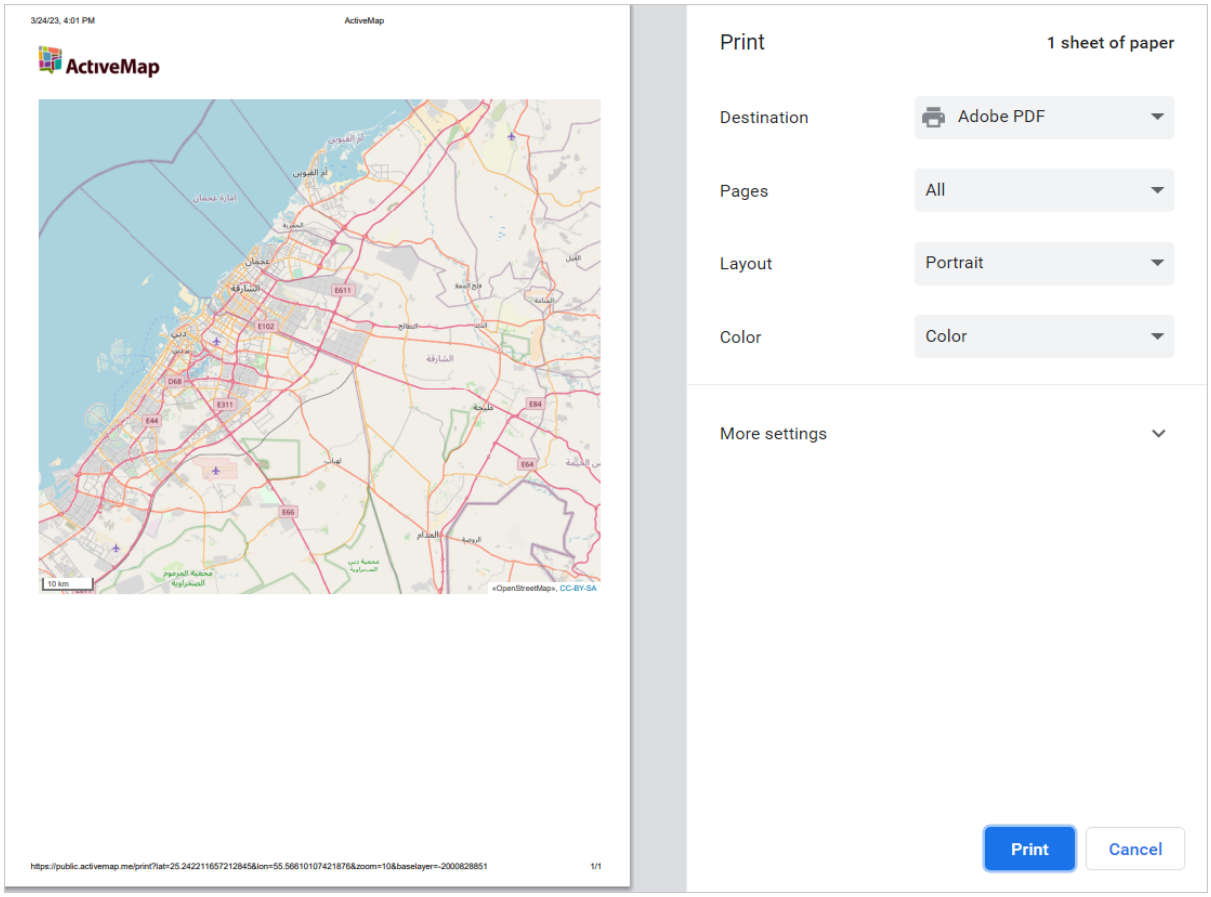


Fig. 2.36: Print wizard window

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

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

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

First, you should select the layers of interest in the Layer control panel. Then click 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 it to the side. A window with a list of objects, located on the selected area, opens on the left side of the page (Fig. 2.37). You can find information about each object in the list by clicking on its name.

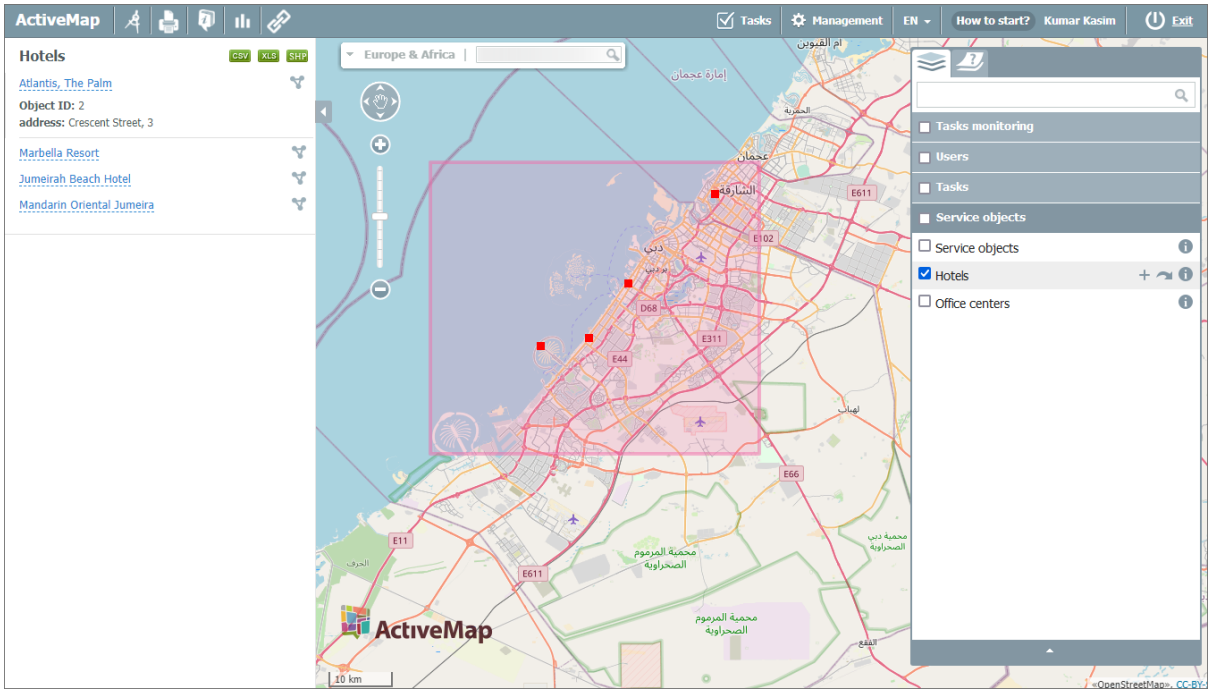


Fig. 2.37: List of objects in the selected rectangular area

To select an arbitrary polygon, mark its vertices on the map. You can move the vertices. When you move in the middle between neighbouring vertices, an additional vertex appears (Fig. 2.38).

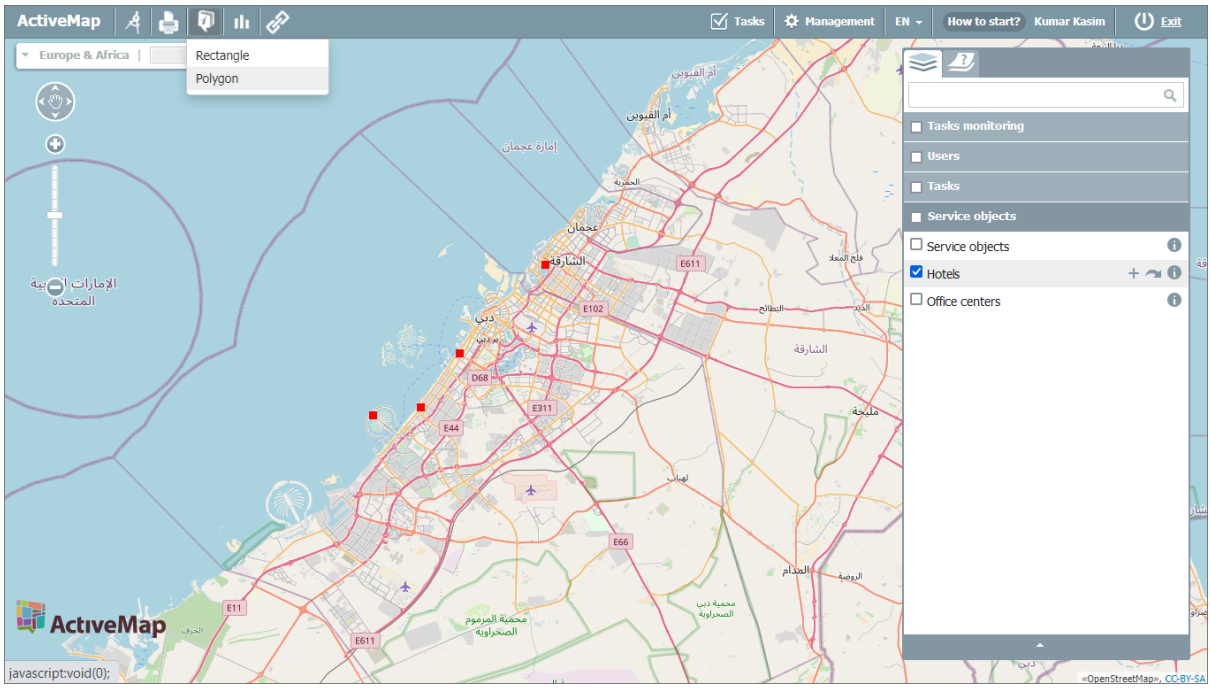


Fig. 2.38: The process of selecting an arbitrary polygon

After all vertices are marked, click on the right side of the “Polygon” selection type. A window with a list of objects (Fig. 2.39) opens on the left side of the page.

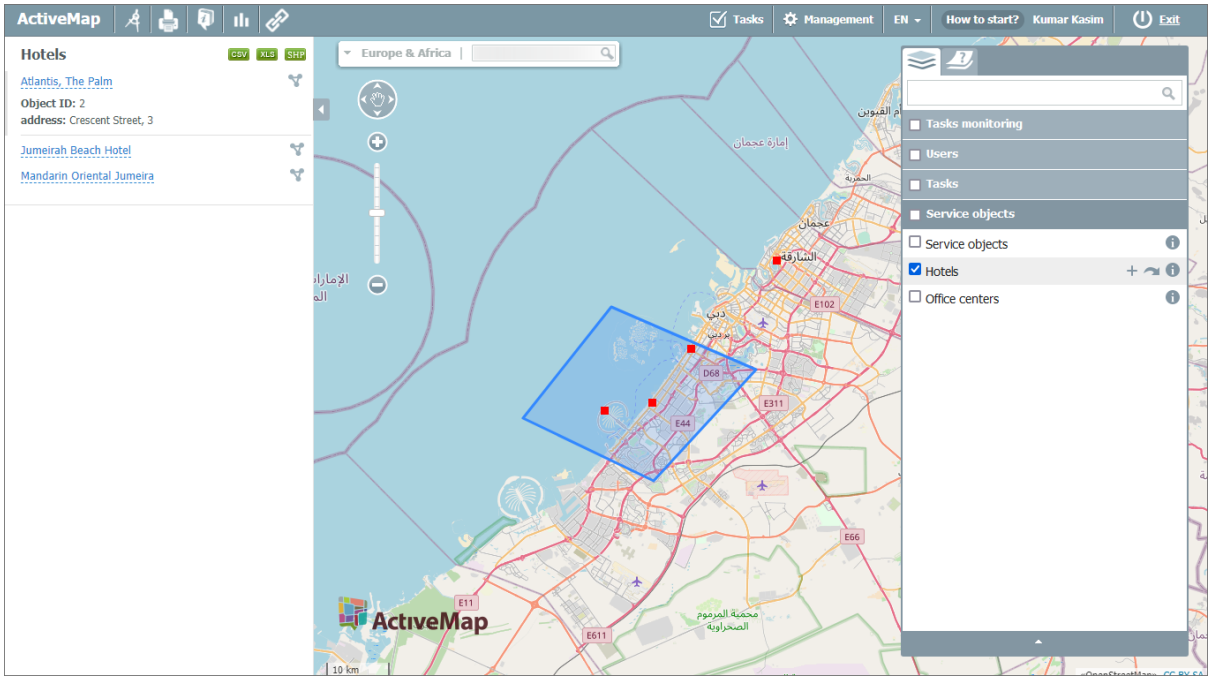


Fig. 2.39: List of objects in the selected polygon

You can export layer data in xls, csv, and shp formats using the buttons above the list of objects . Information about the exported data appears above the search results (Fig. 2.40). You can save or open it in an external program by clicking the export name string.

Fig. 2.40: Information about exported data

– the “Reports” button allows you to generate reports on certain events for a specific period of time.

When clicking the button, a list of report parameters opens (Fig. 2.41). By selecting the required ones you can save the report in any format (PDF/Excel/Word/RTF).

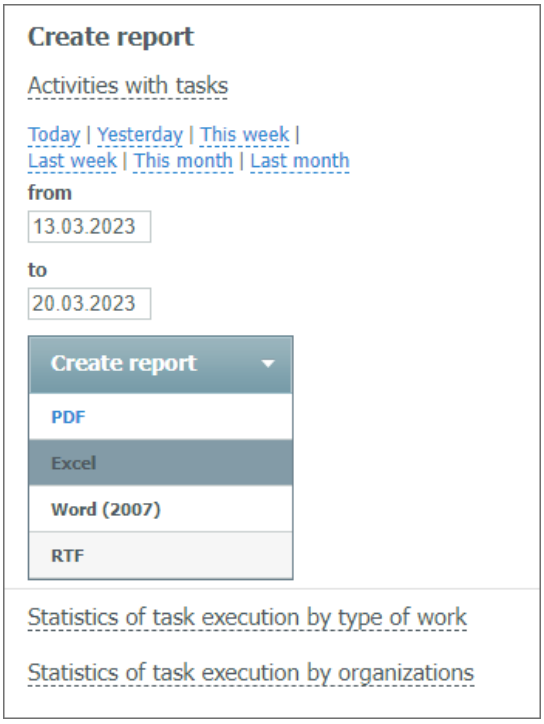


Fig. 2.41: The panel of ready-made reports

Only authorized users with the appropriate rights can use this tool, “Reports” are not available to unauthorized users.

– the “Fixed link” tool allows the creation of an URL link, so that you can go through it on the system. It also creates a HTML code to add to a website.

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

When creating HTML code to add to a website, you can select the parameters – map size, width, and height, and decide whether to display control elements of basic layers and map controls (Fig. 2.42).

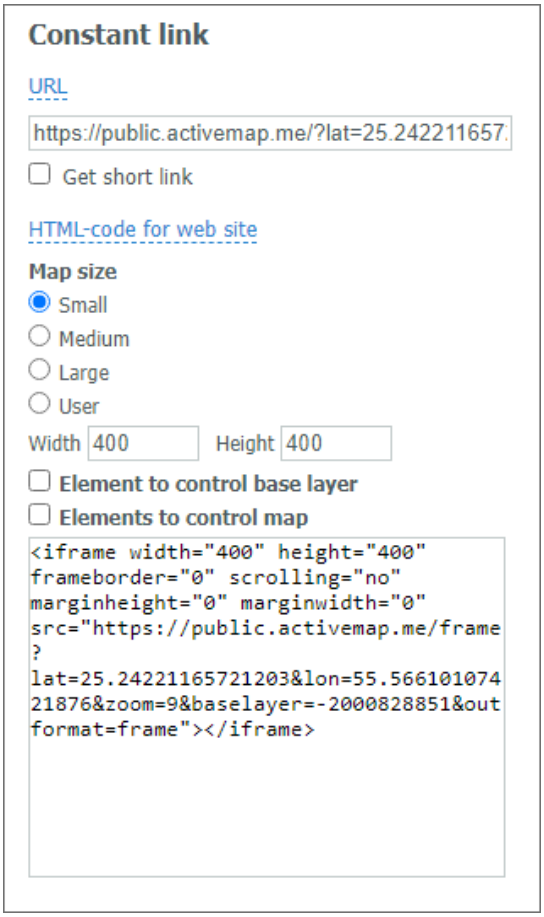


Fig. 2.42: Fixed link settings

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

– the “Online statistics” button opens the statistics module and allows you 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 gets updated at a specified interval based on collected data on user monitoring and online tasks (Fig. 2.43).

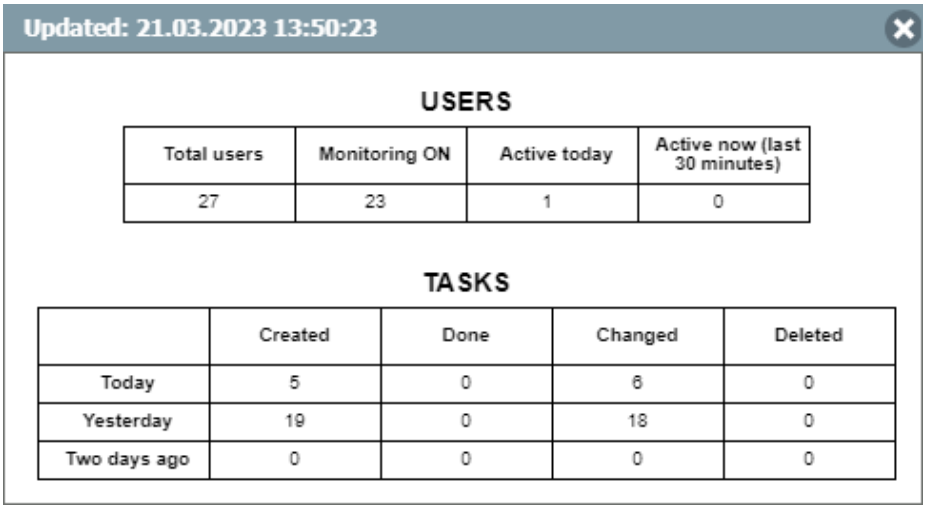


Fig. 2.43: Online statistics module

2.7 User panel

The User panel includes the following elements (Fig. 2.44):

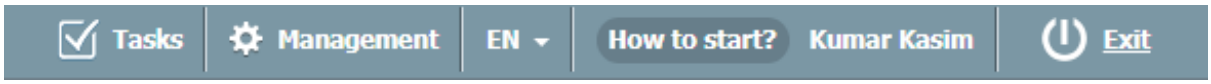


Fig. 2.44: User panel

- “Task module” – allows the creation of operational and planned tasks in the system.
- “Management module” – allows getting information and manage organizations, users, tasks, layers, layer groups, and their parameters within the user access rights.
- “Interface language” – allows switching the interface to one of the available languages.
- “How to start?” button – directs you 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 you to log out from the user account).

2.7.1 Tasks module

The Tasks module allows you 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 with a date and time specified in the schedule according to a given template.

You can create tasks within the contracts, agreed either with an organization, or independent 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 System Administrator, Organization Administrator, or the Cluster Administrator.

To go to the tasks module, click "Tasks" (Fig. 2.45) on the user panel on the main page of the geoportal.

Fig. 2.45: Accessing the task module

Contracts

Contracts in ActiveMap

A contract is an agreement for the provision of services made with an organization or client. Users with the System Administrator or Cluster Administrator permissions can create, edit, and delete contracts. Contracts operate within the cluster. The cluster is selected automatically. When creating a contract, the cluster of the customer organization is used. In another cluster, this contract is not available to users. The System Inspector, Cluster Inspector, Administrator and Inspector of the Assigned Organization have right to view the contract. Users, who see the task created under the contract, also receive minimal information (id, title). A contract may include a list of service objects and types of work.

You can create tasks only within one contract. You cannot add the same tasks to a different contract. However, you can attach multiple tasks and schedules 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 ad hoc tasks created under it and the tasks created under the schedule are preserved (the contract name is displayed in the task), but the schedule itself is deleted.

List of contracts

To access the window with contracts in the "Tasks" module, click "Contracts" on the top panel of the page. In the opened window (Fig. 2.46), the System Administrator and System Inspector can see the entire list of contracts entered into the system. The Cluster Administrator and Cluster Inspector can view the cluster contract list. The Organization Administrator and Organization Inspector can see the organization contract list. All other users see the list of contracts for available tasks.

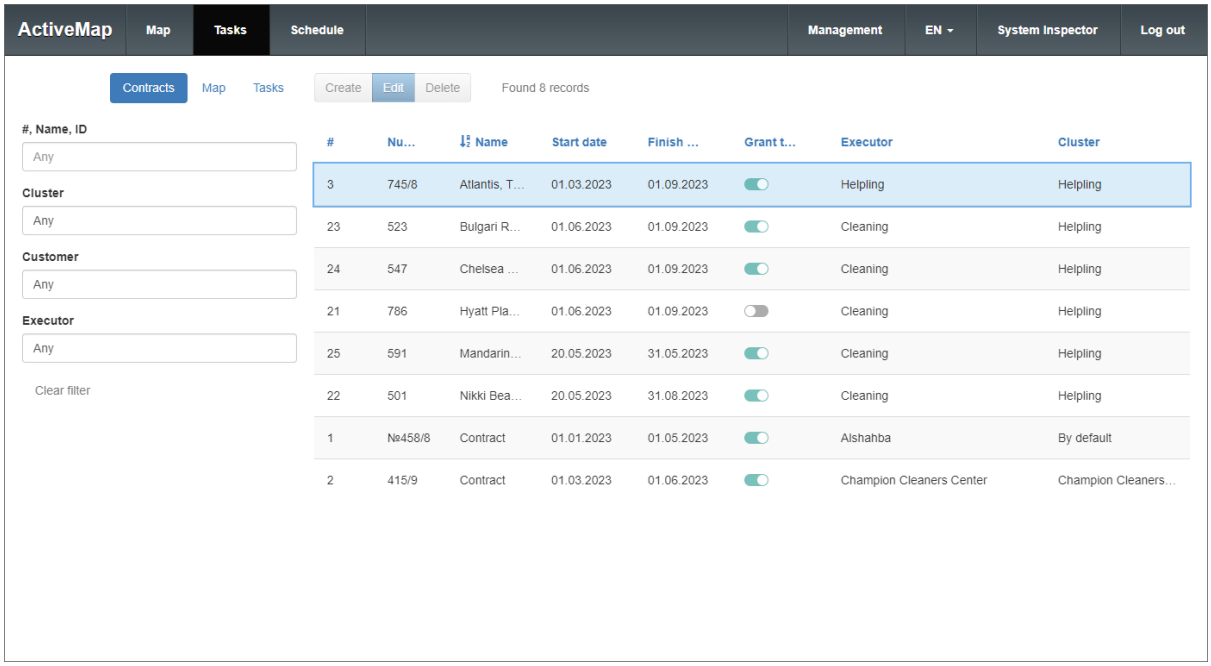


Fig. 2.46: List of contracts

The contracts window has a search by the 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 the attribute name.

Task map

To switch to the task map window, click the “Map” button on the top panel of the task module page. In the opened window, you will see a map with tasks that have coordinates (Fig. 2.47).

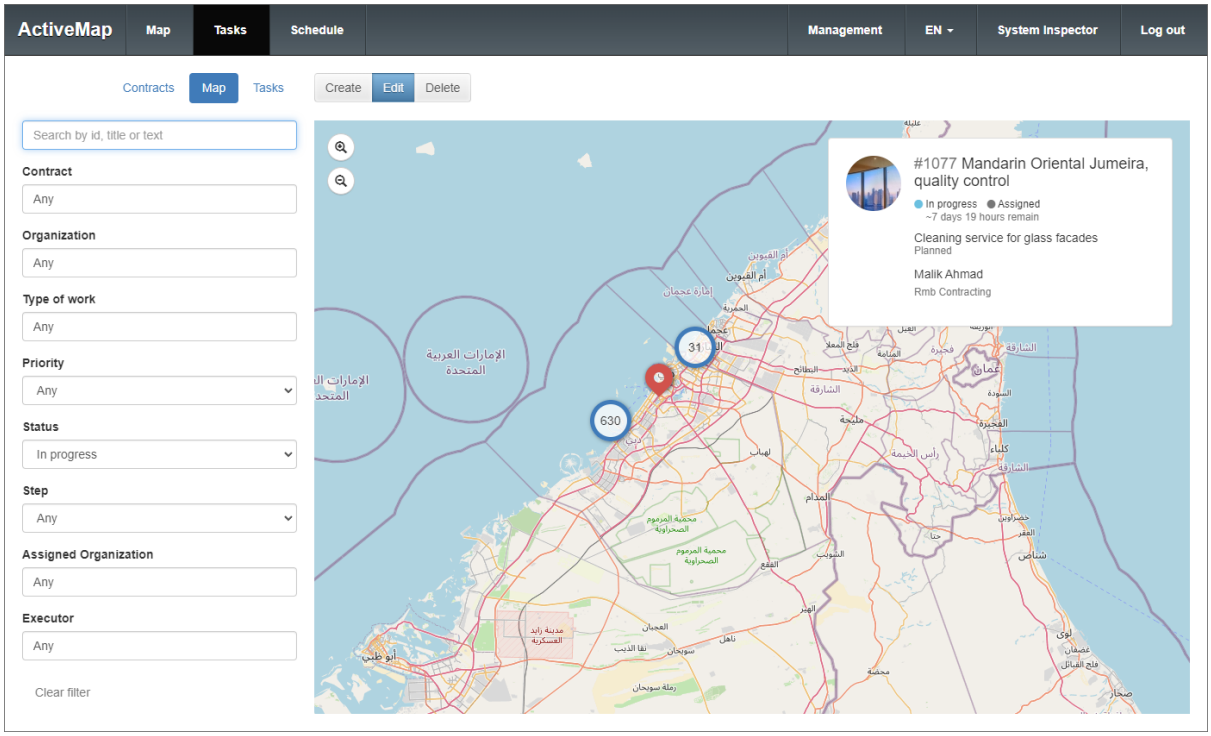


Fig. 2.47: Map of tasks with coordinates

Clustering is used when displaying icons on the map. Clustering is the display of a group of point layer objects located nearby with a single mark on the map. The circle indicates the number of tasks grouped into the cluster.

The color of the task icon depends on its status:

- In progress – blue;
- Completed – green;
- Rejected – gray.

The colors are fixed and you cannot edit them.

You can select a task on the map and view detailed information about it. When clicked, the task icon turns red. The task card displays the following information:

- ID
- Title
- Status
- Step
- Deadline
- Type of work
- Priority
- Assigned organization
- Executor

If the task was created by a schedule, the schedule name is also displayed. You can switch to the schedule or template editing mode (Fig. 2.48).

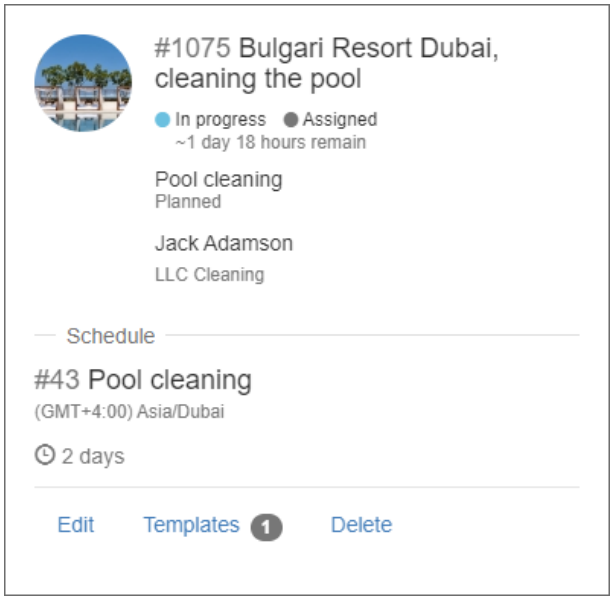


Fig. 2.48: Task information on the map

To the left of the map there is a filter area for selecting tasks based on various parameters:

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

To search for a task, enter part of its number, name, or description. To filter tasks by status, type of work, step, priority, organization, performing organization, or executor, select values from the dropdown list. After entering and selecting all filtering parameters, the map displays tasks that meet the specified criteria.

Creating an operational task

To generate a new operational task, click the “Create” button. A window opens with “Main” and “Files” tabs (Fig. 2.49).

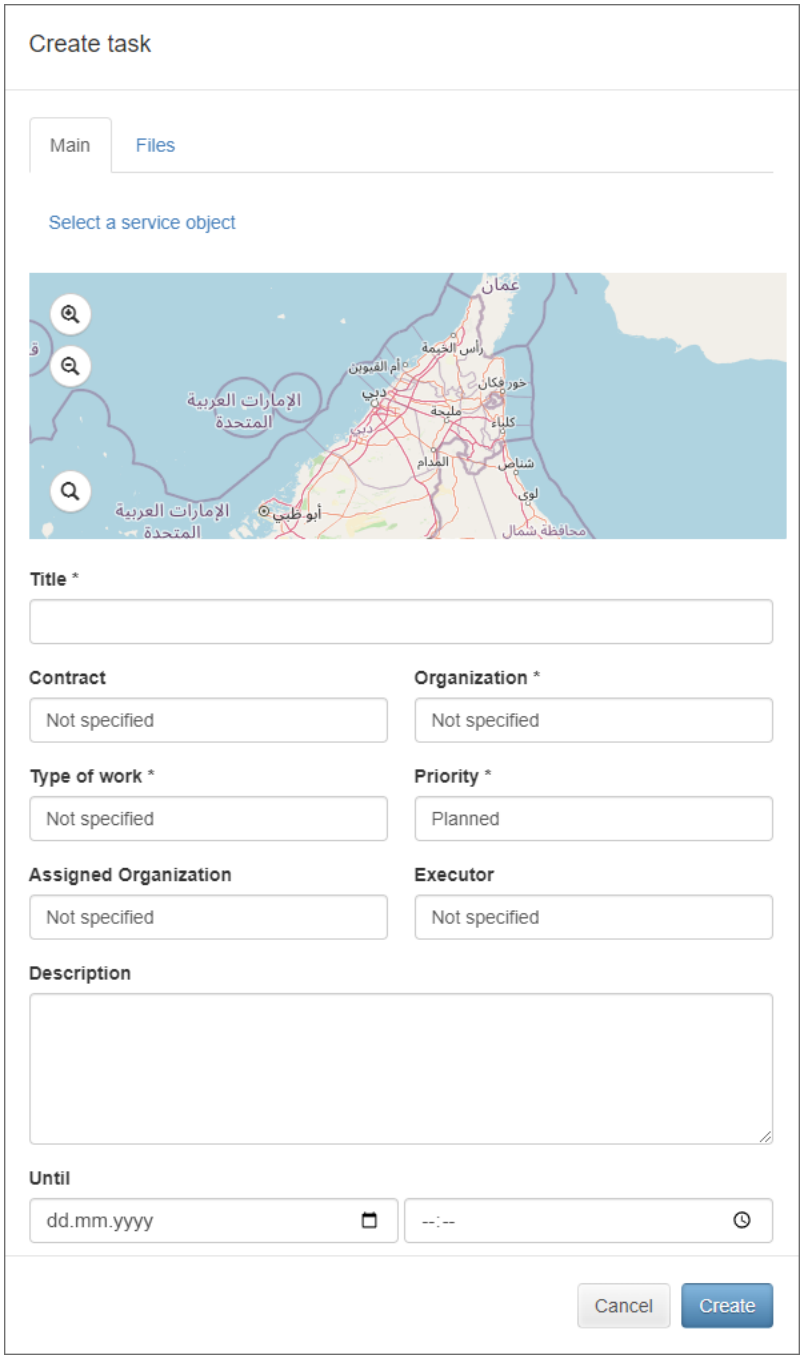


Fig. 2.49: New task creating window

The “Main” tab displays a map to specify the location of the object and fields in order to fill in the task characteristics.

To mark the location of the task object on the map, zoom in to the area of interest using and buttons and/or mouse and click on the map. You can also enter

the address of the object in the search field. The search results are displayed as a list. When you hover over each of them, the Program moves to the specified address on the map (Fig. 2.50). If the task is not bound to a specific location, the geolocation can be omitted.

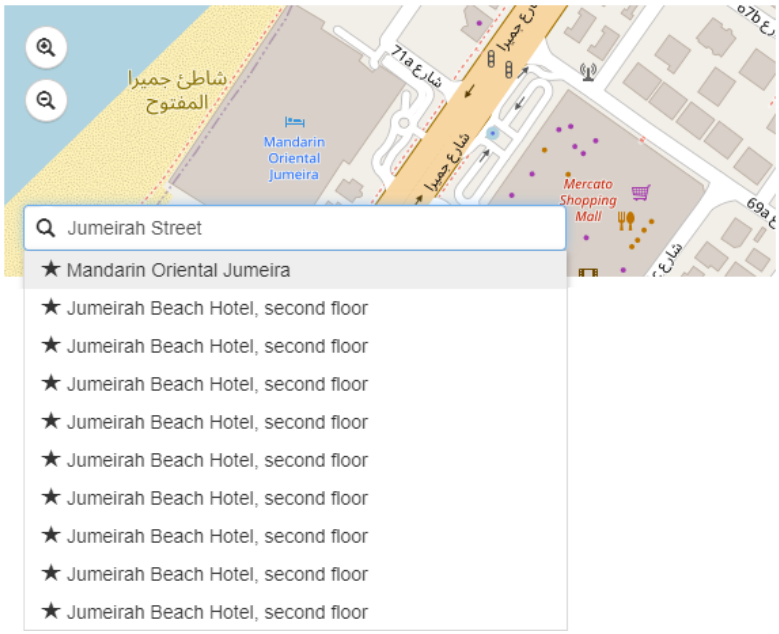


Fig. 2.50: Search for the object address on the map

You can link a task to a service object. To do this, click “Select service object” above the map. Choose the service object layer in the left part of the opened window in the “Layers” tab. After that, objects of this layer are displayed in the “Objects” tab in the right part of the window. You can use the search line in each of the tabs. Select an object in the list and click “Select” (Fig. 2.51).

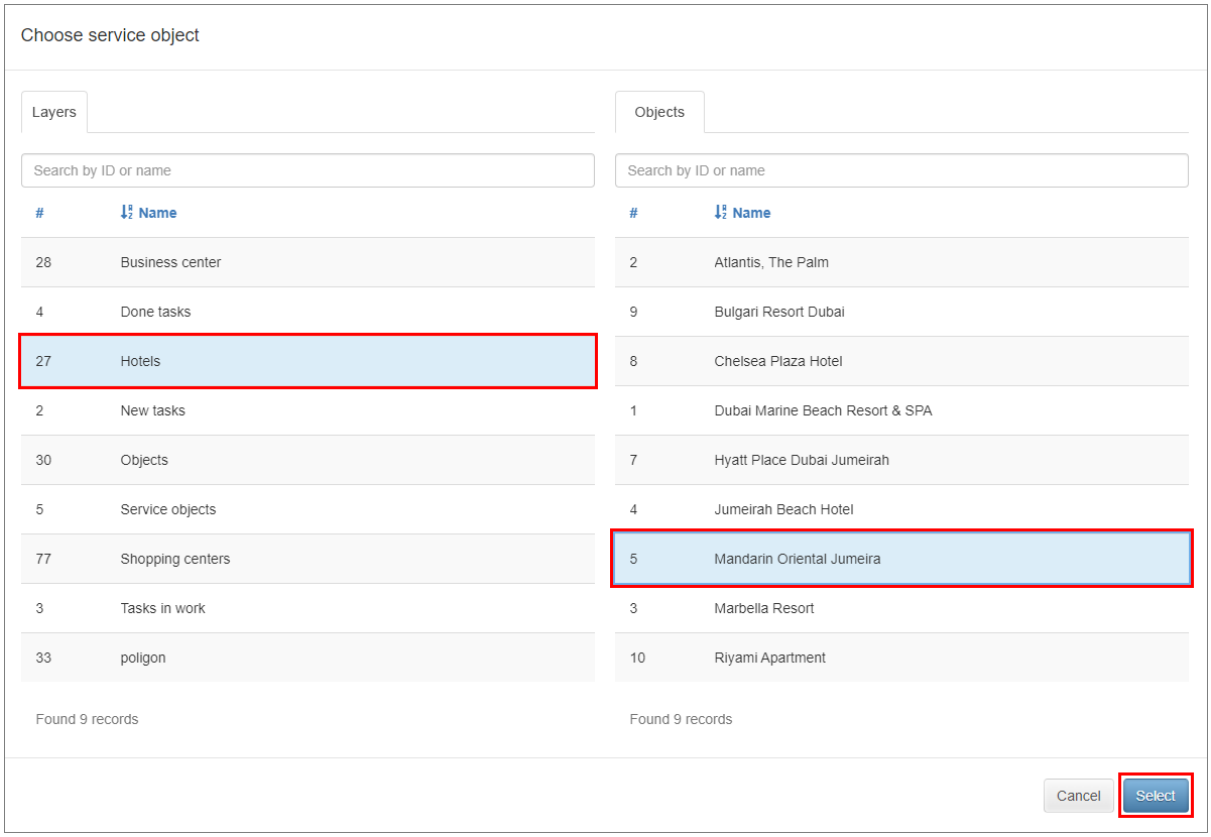


Fig. 2.51: Service object selection window

The selected service object is displayed on the map in the task window, the task fields are filled in according to the configured mapping. You can edit filled fields and enter values into empty fields (mandatory fields are marked with an asterisk) (Fig. 2.52):

- **Title** – a brief description of the problem/goal of the task (mandatory field).
- **Contract** – the contract under which the work is carried out.
- **Organization** – the organization on whose behalf the task is created (mandatory field, this field is available to the System Administrator, System Inspector, Cluster Administrator, and Cluster Inspector).
- **Type of work** – type of work for the task (mandatory field).
- **Priority** – a characteristic of the urgency of the task (mandatory field, you can choose from the list: planned, unplanned, additional, etc.).
- **Assigned organization** – the organization to which the task is assigned for execution. When you select a contract, the system automatically fills in the field with the value specified in the contract. When you select an organization, it uses the value from the organization card.
- **Executor** – the user responsible for performing the task.
- **Description** – a detailed description of the task.
- **Until** – the date and time by which the task should be completed.

- **Custom fields** – additional fields of different formats previously created and linked to a specific type of work.

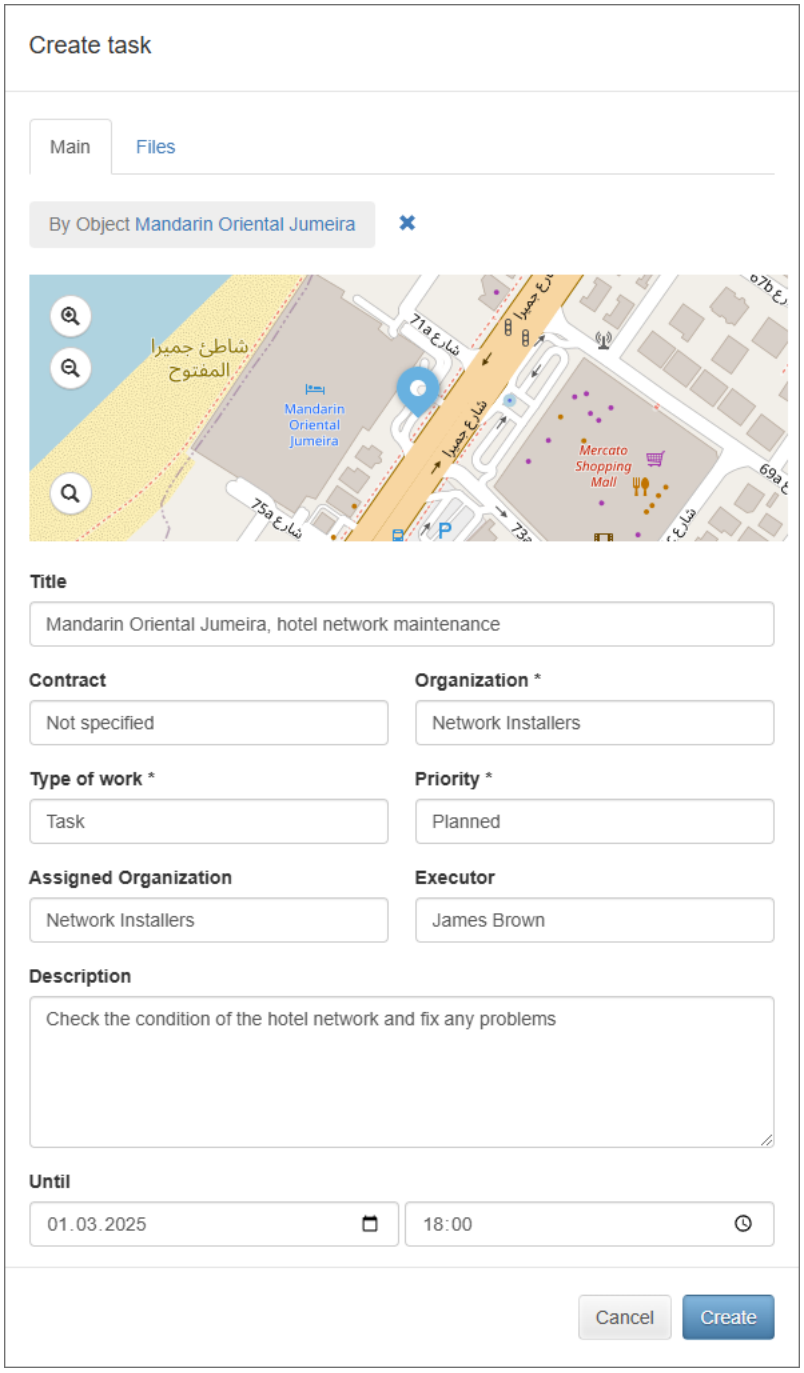


Fig. 2.52: Task creation window with selected service object and filled fields

If there are composite fields among the custom fields, the task creation window displays the specified minimum number of nested fields of the composite field and the “Add” button (Fig. 2.53). You can add nested fields up to the maximum number set in the settings and delete them down to the minimum. Once the threshold values are reached, the “Add” button becomes inactive. If both the minimum and maximum number of instances for a field are set to 1, you cannot add or remove nested fields. These rules apply to composite fields at both the first and second

levels.

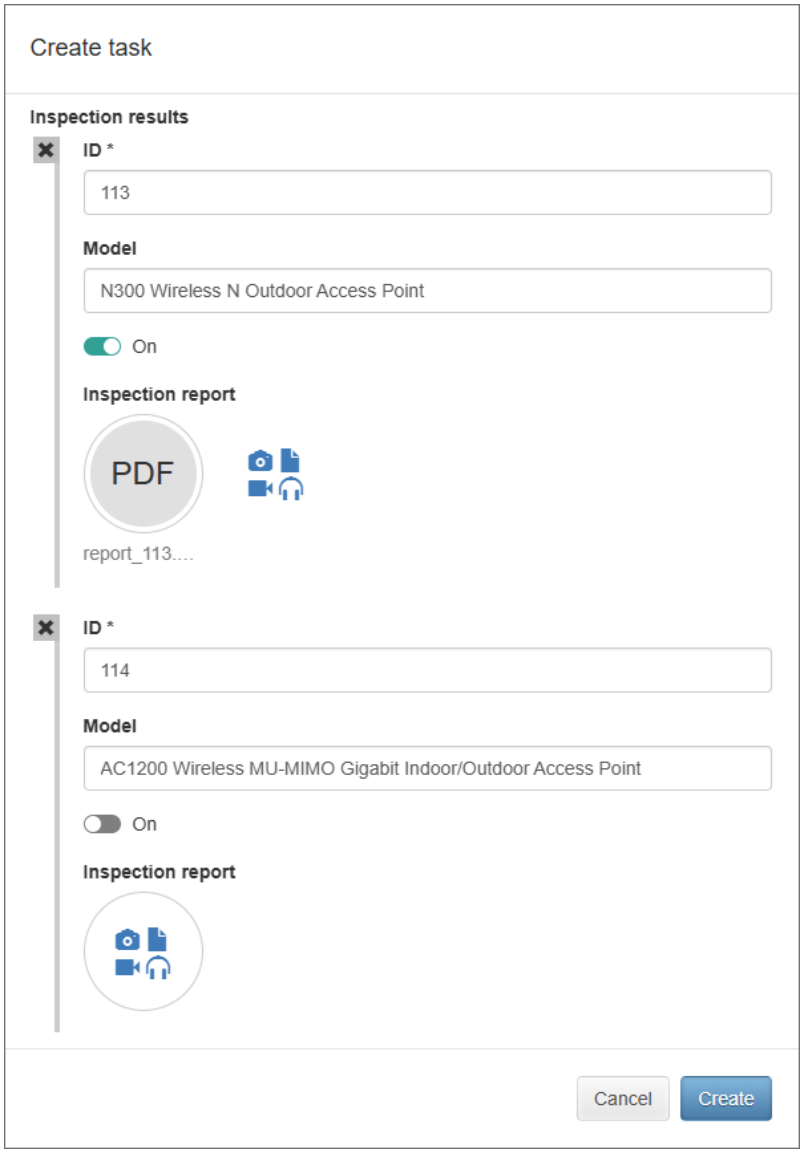


Fig. 2.53: Filling in composite fields in the task creation window

If the task has a custom field of the “File” format, you can attach files to the task by clicking the corresponding button under the field name (Fig. 2.54).

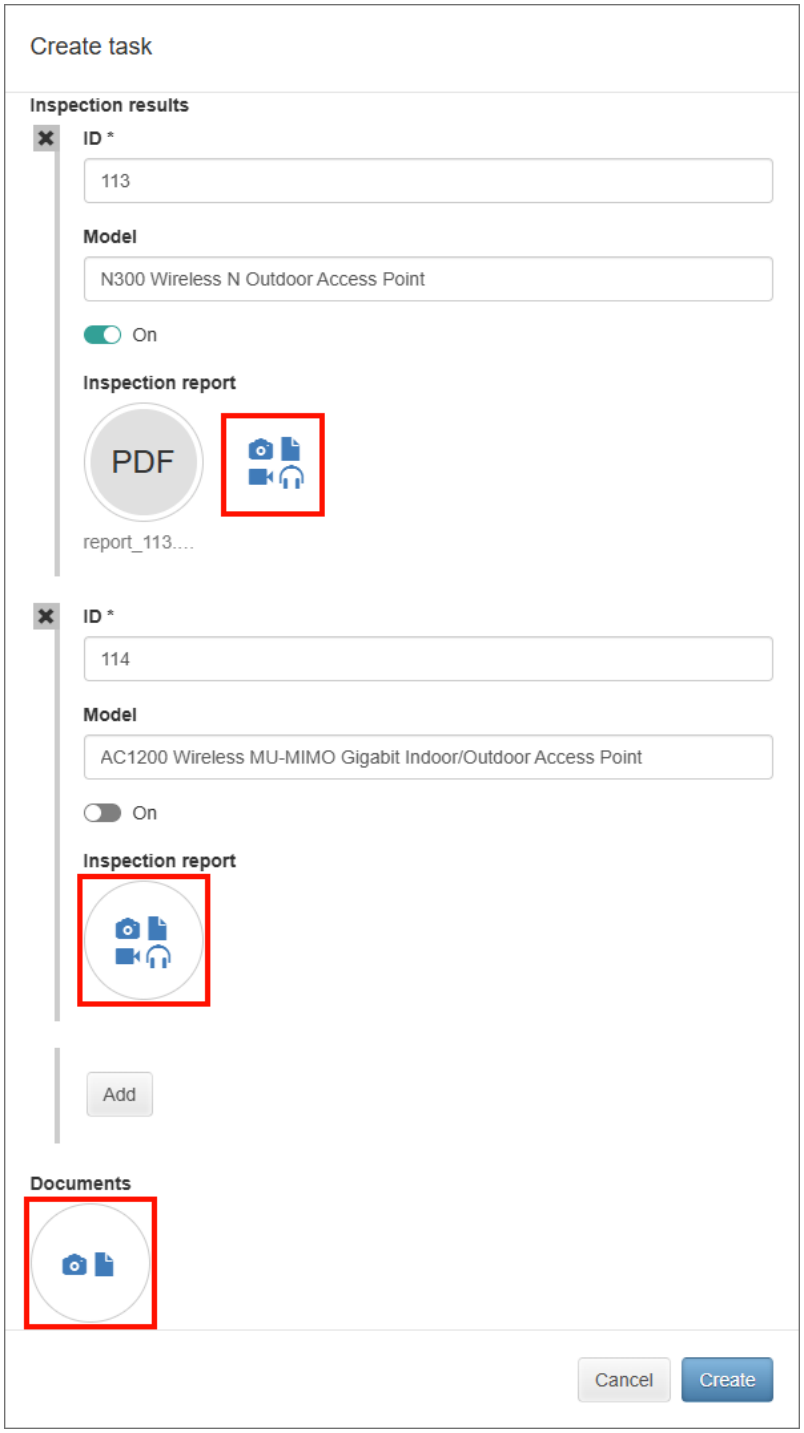


Fig. 2.54: Adding a file to a custom field in the task creation window

Icons indicate which file types (one or more) are available for upload: photo, video, audio, or document (for other file types). If the photo added to the custom field was the first one, it becomes the main one. Changing the allowed file types does not affect already uploaded files, but applies to new uploads.

The number and size of attached files cannot exceed the set minimum and maximum values. If no minimum and maximum values are set, you can add any number of files of any size. Changes to the minimum and maximum values do not affect existing tasks, but apply to newly created ones.

In addition to using the custom field, you can also attach files to a task in the "Files" tab (Fig. 2.55). These can be photos, videos, audio recordings, or text files.

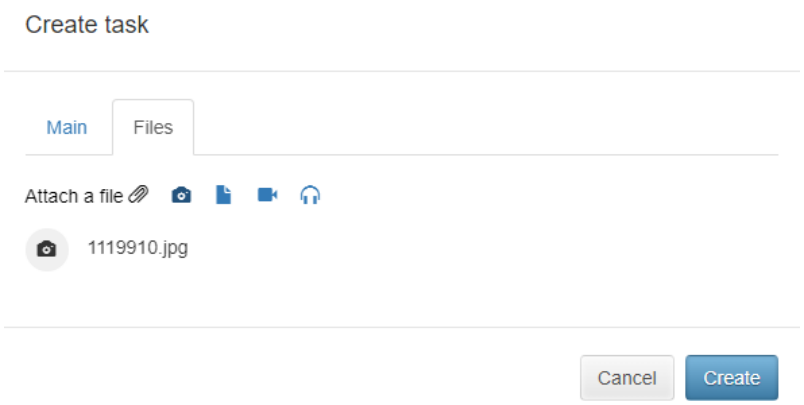


Fig. 2.55: Adding files to a new task

Editing a task

The ability to edit task fields depends on the user role. To edit a task, click on its icon and then click "Edit" at the top of the window. The task opens in the edit mode. Here you can fill in/modify the available fields (Fig. 2.56).

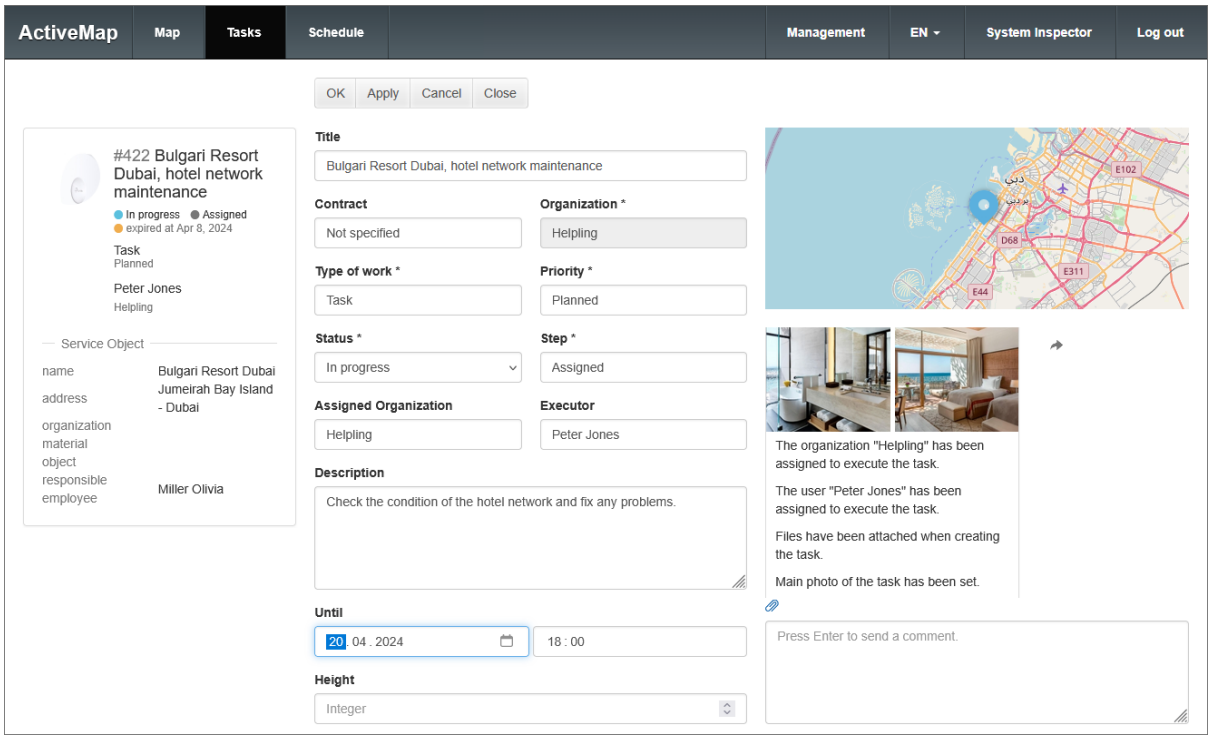


Fig. 2.56: Task editing window

You can attach new files to a task. Click the icon on the right side of the

window, select the file type, and press Enter to submit a comment (Fig. 2.57).

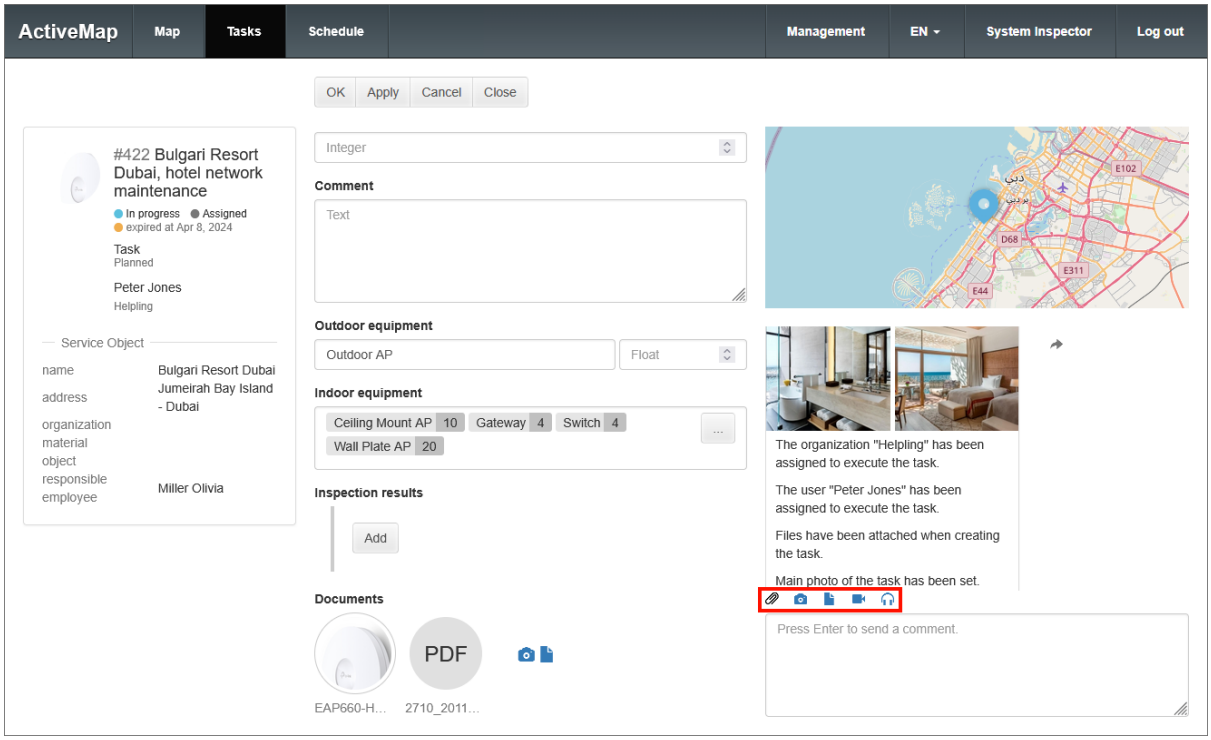


Fig. 2.57: Adding new files to an existing task

You can also add new files to the custom fields of the “File” format (Fig. 2.58).
For more details, see *Creating an operational task* (page 40).

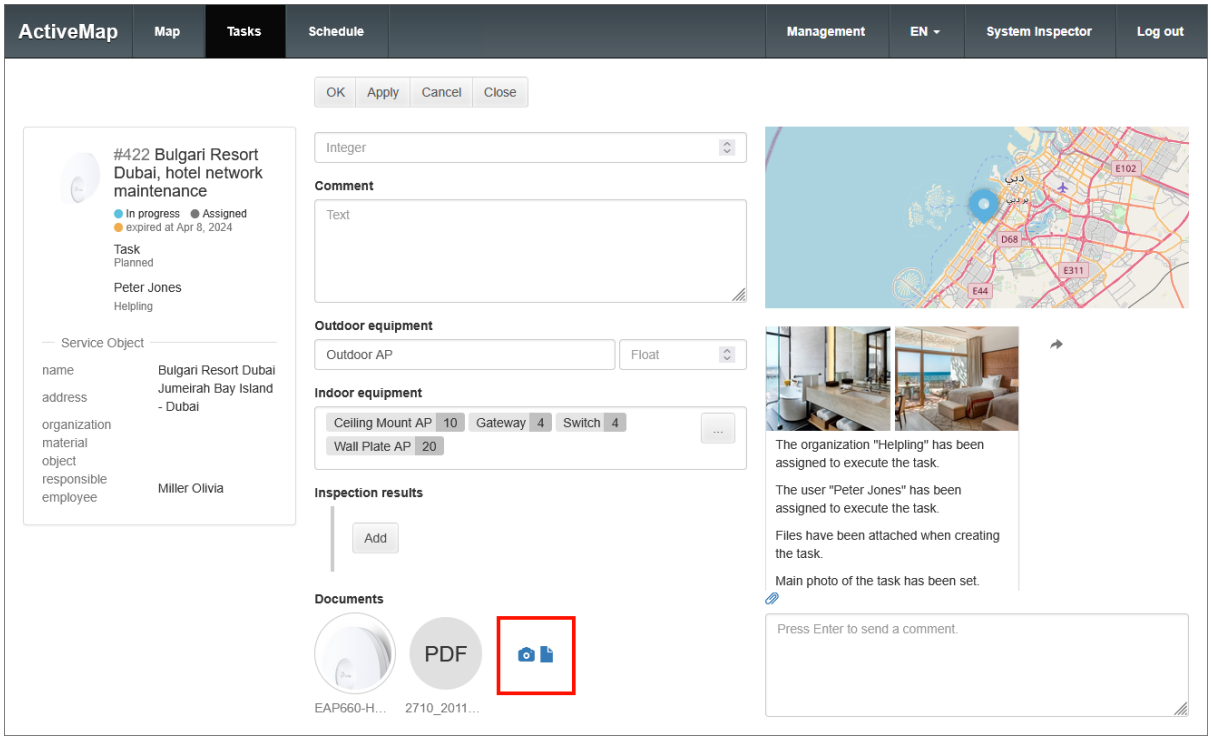


Fig. 2.58: Adding new files to a custom field

The ActiveMap Web interface does not support deleting files attached to a task unless they are linked to a specific custom field. However, users can delete these files in other system applications, such as ActiveMap Desktop or ActiveMap Mobile.

To delete a file from a custom field, click on the preview and check if a trash bin icon appears instead of it (Fig. 2.59). Then, click the “OK” or “Apply” button. This action removes the selected file from the custom field.

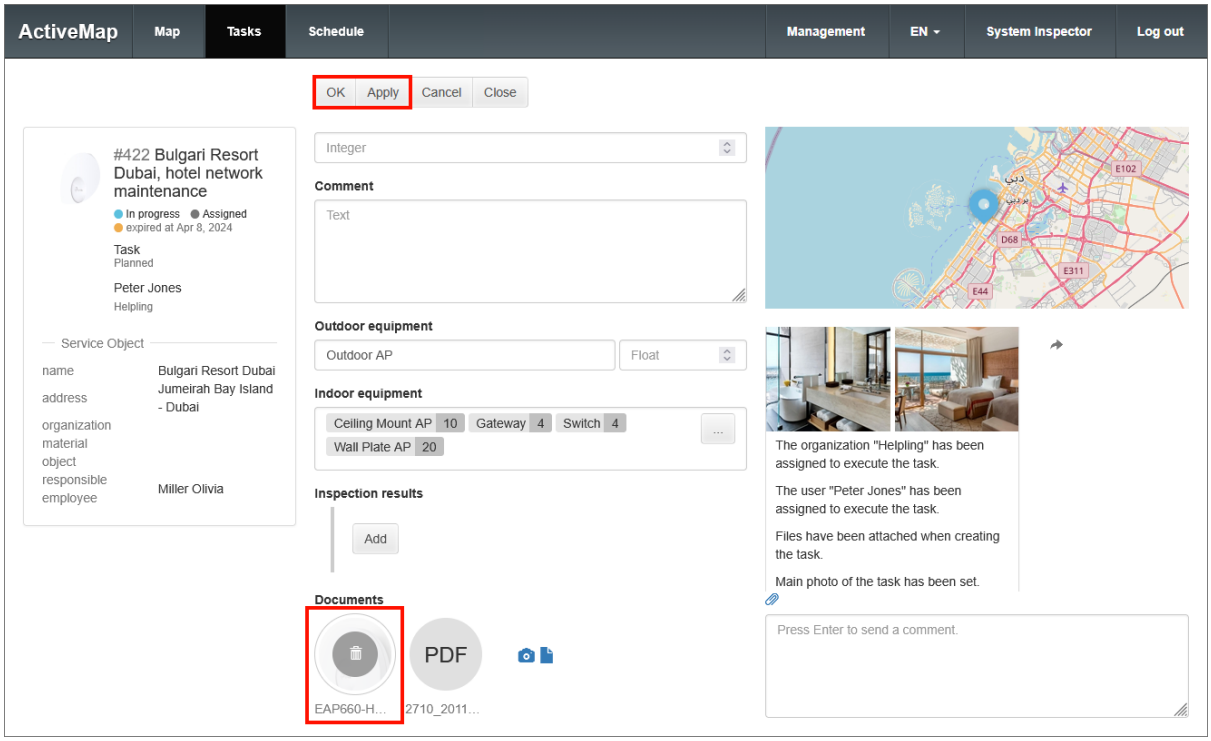


Fig. 2.59: Deleting an attached file from a custom field

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

- “OK” – saves changes and go to the list of tasks.
- “Apply” – saves changes without closing the editing window.
- “Cancel” – cancels all changes made before saving.
- “Close” – closes the editing window (changes are not saved if they are not saved before closing).

When saving the changes made in the “File” format field, the system checks the type, number and size of newly entered files. If any condition is not met, the system displays a corresponding message and does not save the changes.

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

Deleting a task

The ability to manage tasks depends on the user role. To delete an existing task, click on its icon and then click “Delete” at the top of the window. Confirm the action in the pop-up information window (Fig. 2.60).

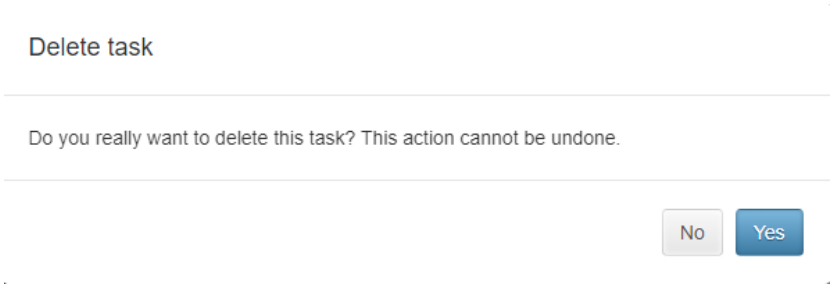


Fig. 2.60: Deleting a task

If the user does not have the right to delete tasks, a “No access rights” message appears.

Task list

To access the task list, click “Tasks” on the top panel of the “Tasks” module page. In the window that opens, you can see all the tasks created so far, including tasks without georeferencing (Fig. 2.61).

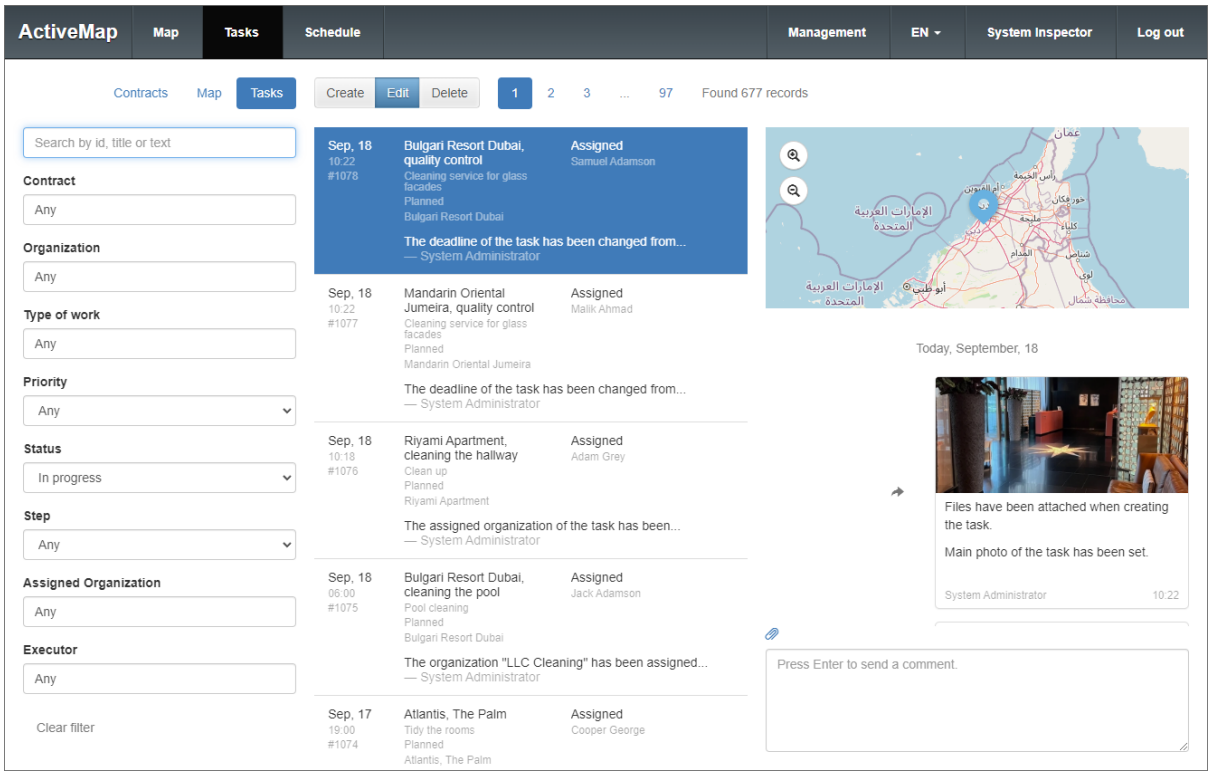


Fig. 2.61: List of tasks available to the user

Just like in the task map window, you can filter, edit, and delete existing tasks in the task list window, as well as create new operational tasks.

The filter area located to the left of the list of tasks is intended for searching in the general list. After entering and selecting all the filtering parameters, the list displays the tasks that meet the specified criteria.

To create a new operational task, click the "Create" button, fill in the fields in the opened window, and save the changes. Creation of tasks is described in detail in the *Creating an operational task* (page 40) section.

To edit a task, select the required task and click "Edit" at the top of the window or double-click on the task. In the window that opens, make the necessary changes and save them. Editing tasks is described in detail in the *Editing a task* (page 46) section.

To delete an existing task, select it, click "Delete", and confirm your action in the opened window.

Schedules

Schedules allow users to generate tasks automatically, based on templates (typical tasks), at a certain time with the required frequency. To go to the section with schedules and task templates, click "Schedule" on the top panel of the page. The schedule window with a calendar opens (Fig. 2.62).

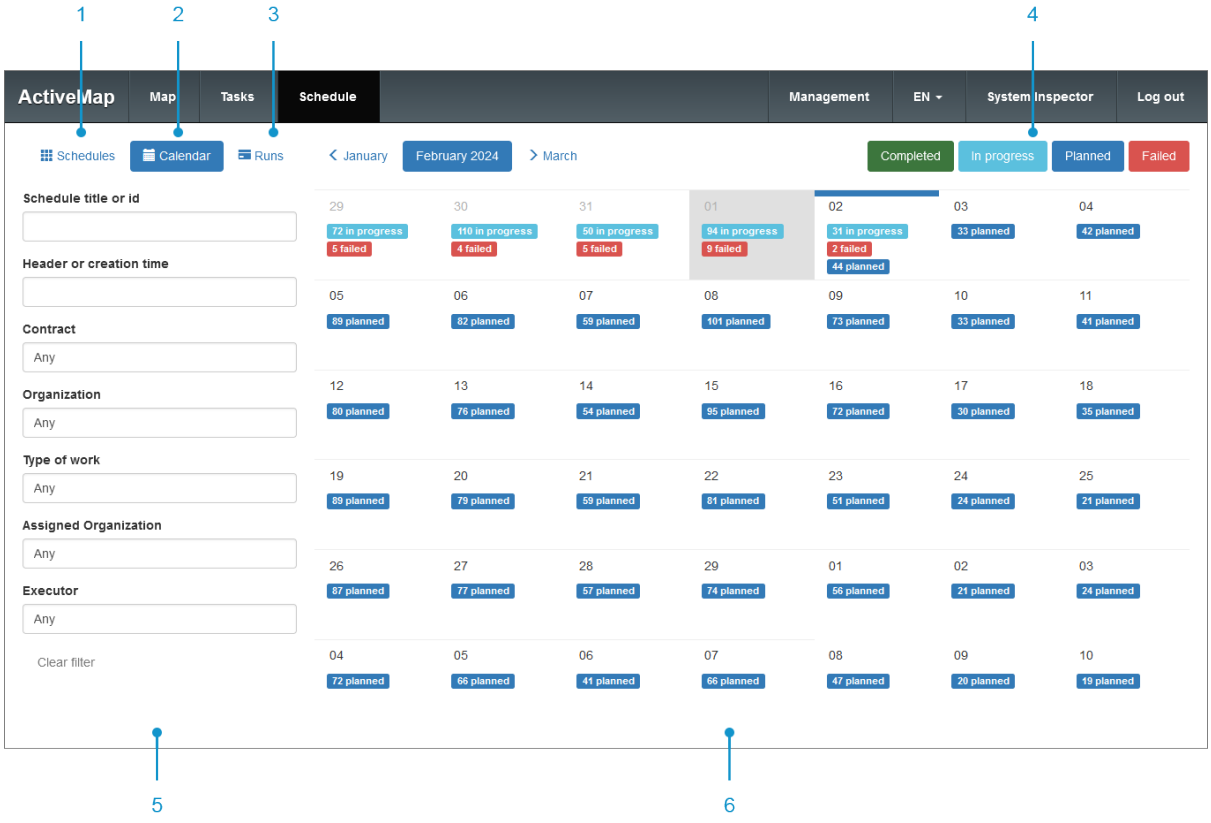


Fig. 2.62: Schedule window with calendar

The window contains the following elements:

1. “Schedules” button – switches to the cards of all available schedules.
2. “Calendar” button – switches to the calendar with schedule launches (the calendar opens by default when you go to the schedules section).
3. “Launches” button – switches 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 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, and the button taking to the list of templates attached to the schedule (Fig. 2.63).

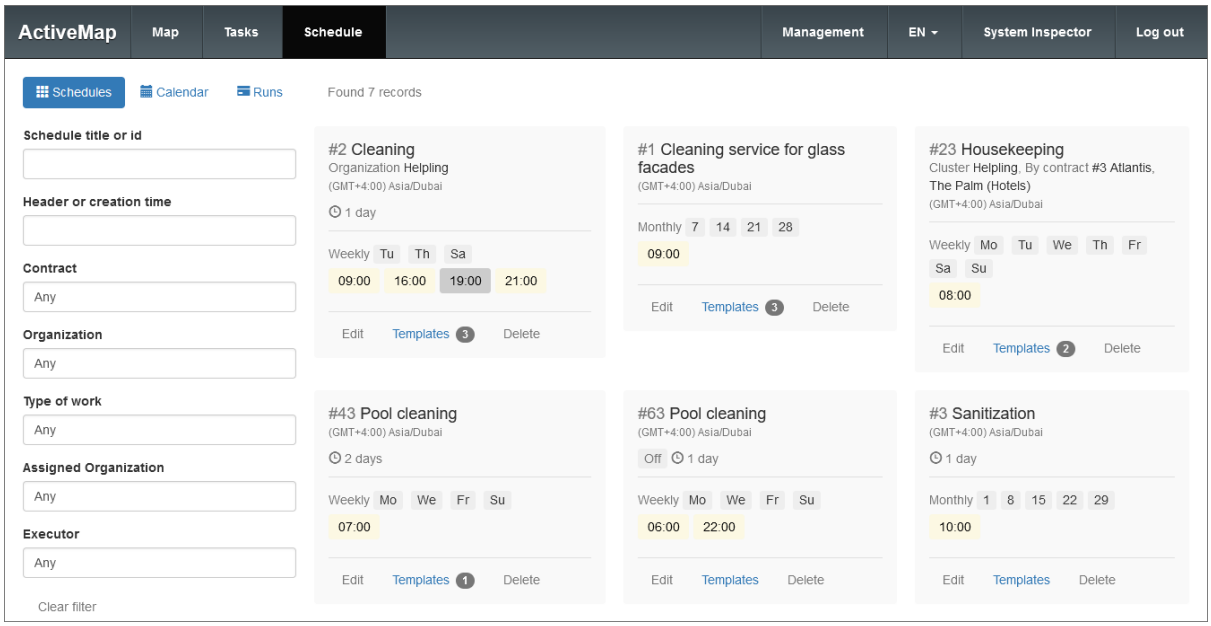


Fig. 2.63: Schedule cards

Clicking the “Calendar” button takes you to the calendar with schedule launches. The calendar with the current month opens by default when switching to the schedules section (Fig. 2.62). The calendar cells display the number of tasks created by the schedule for the day. Tasks are grouped and color coded by status. The colors of the status are displayed in the legend in the upper right part of the window (completed, in progress, planned, and failed). 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 launch window for that day.

You can go to the same window by clicking the “Launches” button. In the right part of the window, there is a smaller version of the calendar with task status marks (Fig. 2.64).

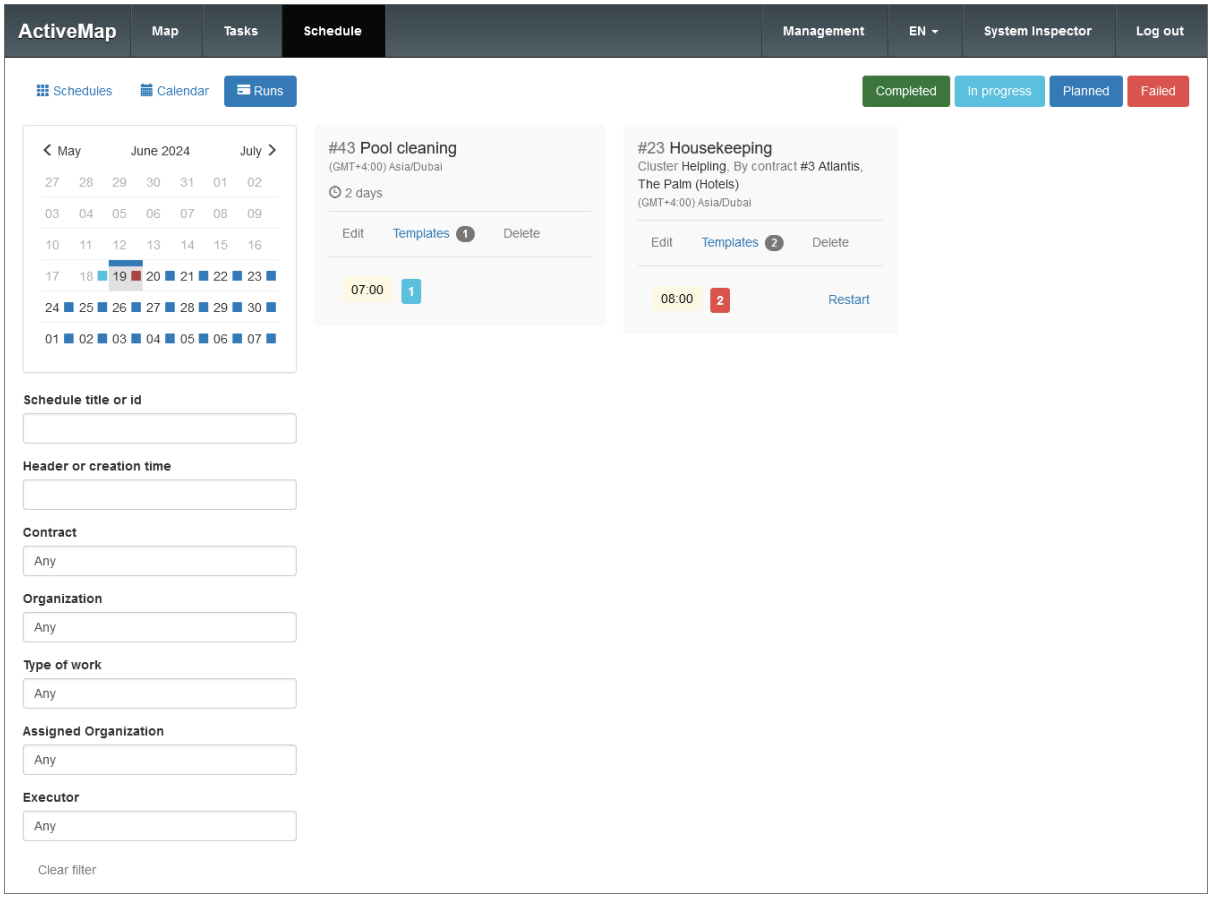


Fig. 2.64: Launches for the selected date

The schedule cards with launches for that day are placed to the right of the calendar. The schedule card displays its name, contract, a button that takes the user 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 takes you to the task templates created at that time (Fig. 2.65).

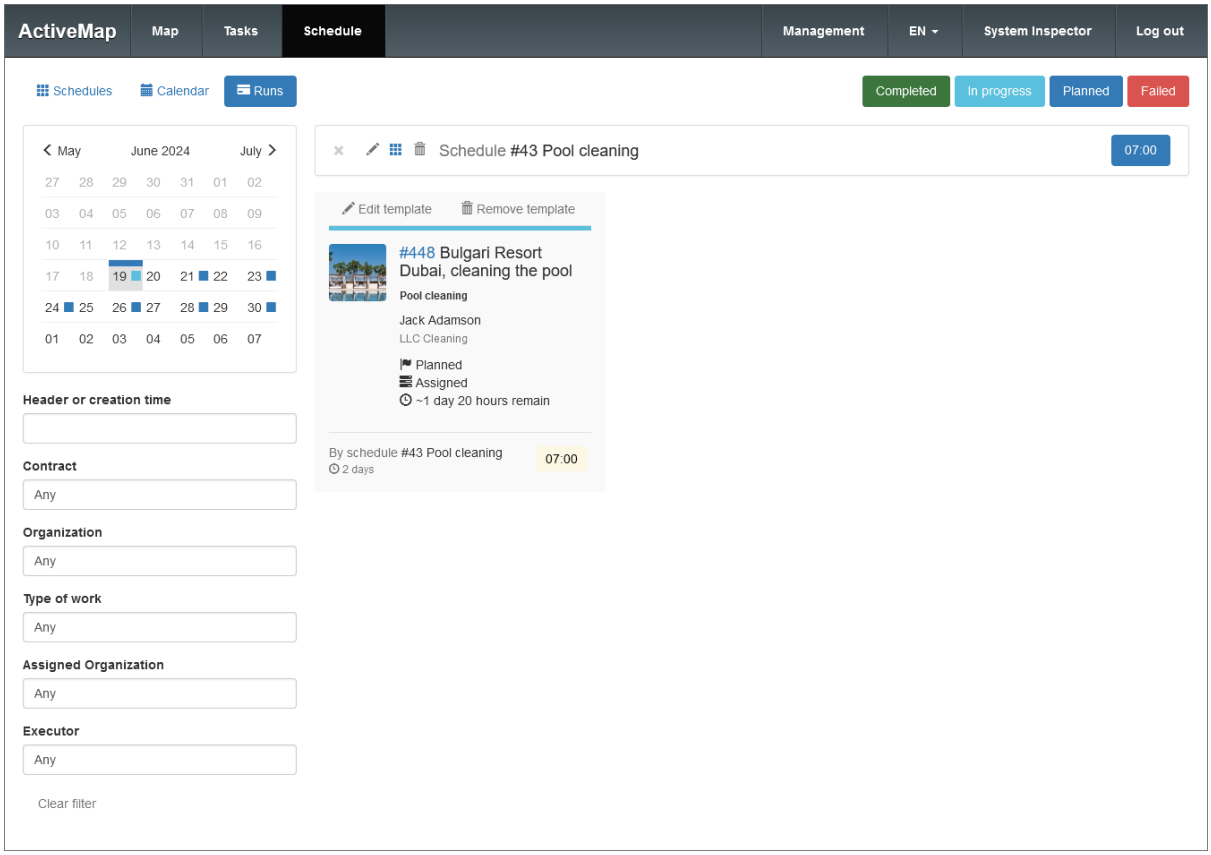


Fig. 2.65: Task templates

If a type of work, priority, organization, assigned organization, or assigned executor used in a template is deleted from the system, a red marker appears next to the deleted value in the template card (Fig. 2.66).

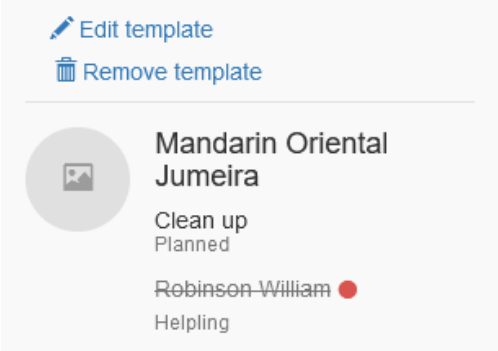


Fig. 2.66: Deleted value marker in the template card

Tasks based on this template will not be created until the deleted value is replaced with an existing one in the template.

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

- System Administrator
- Cluster Administrator

- Organization Administrator

Users with other roles can only view schedules and templates.

2.7.2 Management module

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

To access the management module, click "Management" on the user panel of the geoportal's main page (Fig. 2.67):

Fig. 2.67: Accessing the management module

Management capabilities depend on the user's role in the system. User roles are assigned by the System Administrator, Organization Administrator, or Cluster Administrator. Management module includes the following elements (Fig. 2.68):

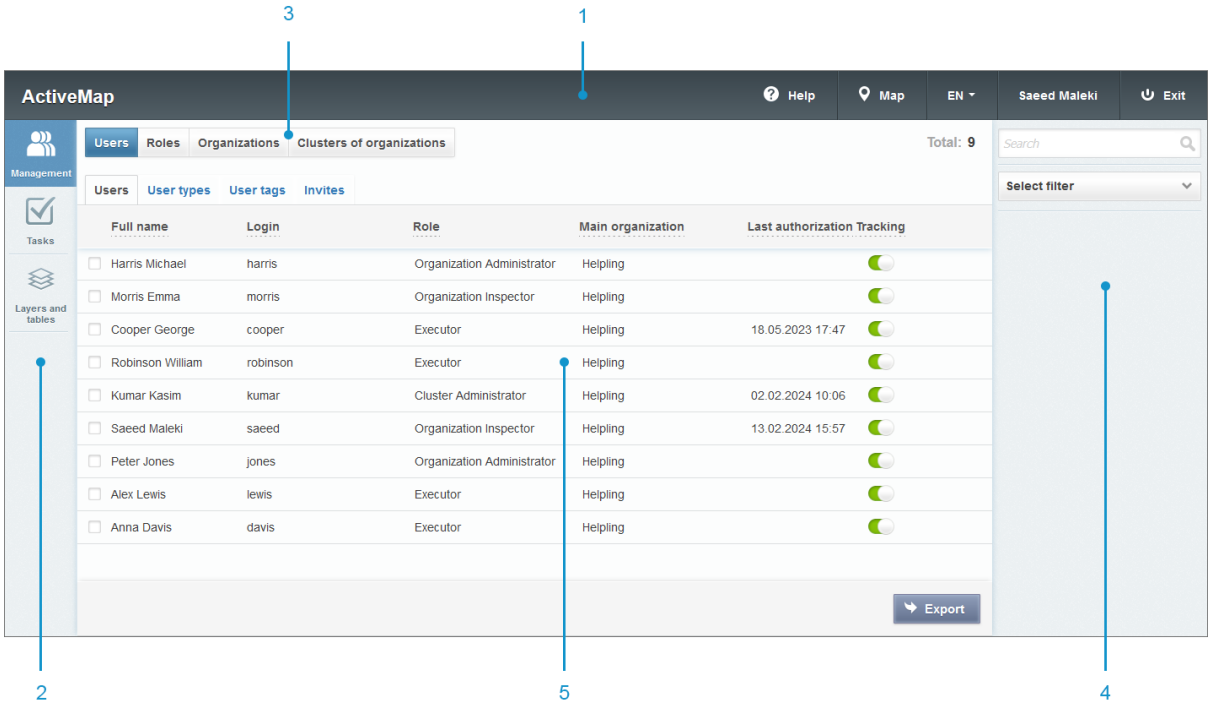


Fig. 2.68: Management module

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, you can sort the available data.

To organize information about a particular element of the system, go to the tab with that element and click the title of the column by which the sorting should be done. When you click again on the column header, the sorting is 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. All elements that correspond to the entered query are 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 the specified search criteria. To get the most accurate search results, 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, go to the section of interest and click

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

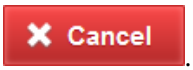
. To cancel adding a new element, click the

button.

Editing an element

To change the data about a certain element, go to the section of interest. Then put the cursor on the element name and click the edit sign 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 opens a form where you can enter new information about the selected element and click

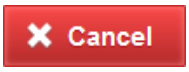
. To cancel editing an element, click 

.

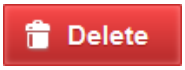
In addition, you can open the editing form by double-clicking the row with the element name.

Deleting an element

To delete a specific element, go to the section of interest. Then hover over the row with the name of this element and click the delete sign 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 opens a dialog box confirming the deletion of the element. To delete the element from the system, click

. To cancel the deletion, click the 

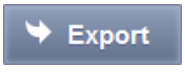
button.

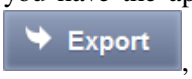
To delete multiple elements, place the mouse cursor on the rows with these elements and select the checkbox next to their names. After that, the 

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

Note: When you try to delete your user or organization, a message appears in the administration area informing you 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 contains information only about the found elements.

User panel

The panel consists of the following elements (Fig. 2.69):

- “Help” – redirects 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 the current user.
- “Exit” – logs out of the user’s account.

Fig. 2.69: 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 57));
- “Tasks” – management of parameters and entities related to tasks: work types, steps of execution, priorities and custom fields, file stickers, access rights to tasks, and plugins (*“Tasks” block* (page 67));
- “Layers” – management of layers, layer groups, and their parameters (*“Layers and tables” block* (page 73)).

“Management” block

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

“Users” tab

The “Users” tab contains information about registered users in the system, roles, and organizations and includes second level tabs (Fig. 2.70):

- “Users”
- “User types”
- “User tags”
- “Invites”
- “LDAP”

"LDAP" tab is available only for users with the System Administrator, Cluster Administrator, System Inspector, Cluster Inspector, Organization Administrator, and Organization Inspector roles

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 in to the system;
- "Role" – user's role in the system;
- "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).

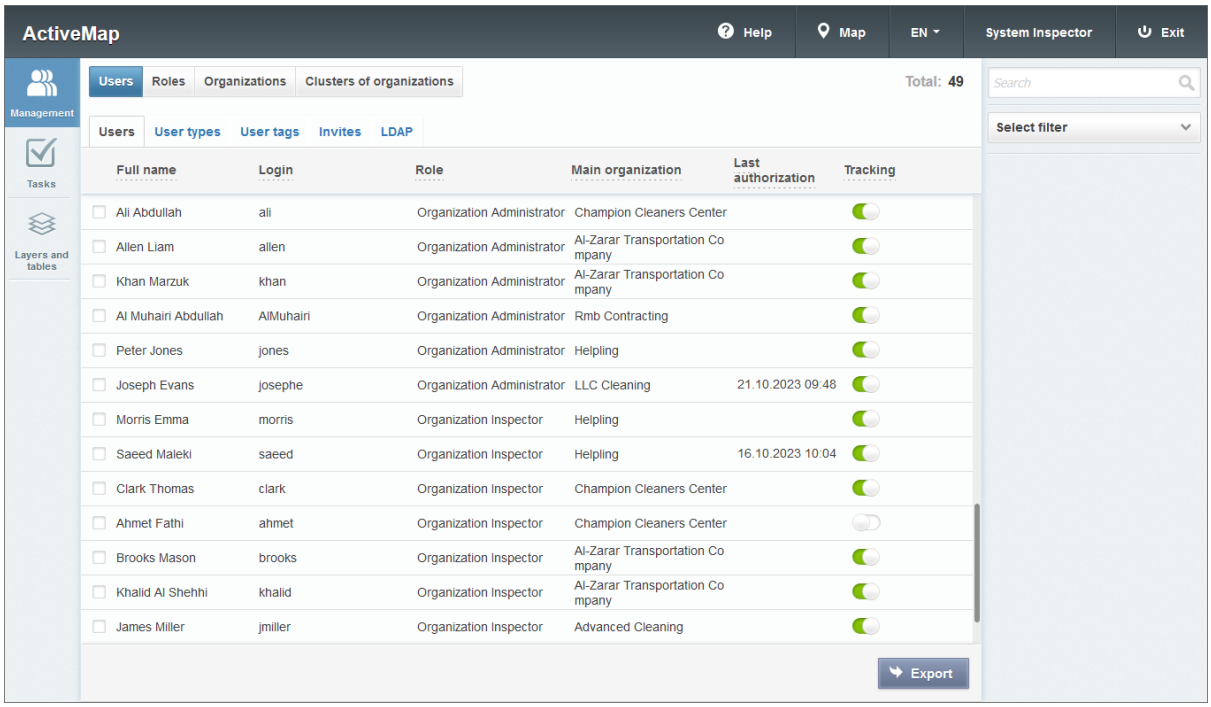


Fig. 2.70: "Users" tab

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. 2.71).

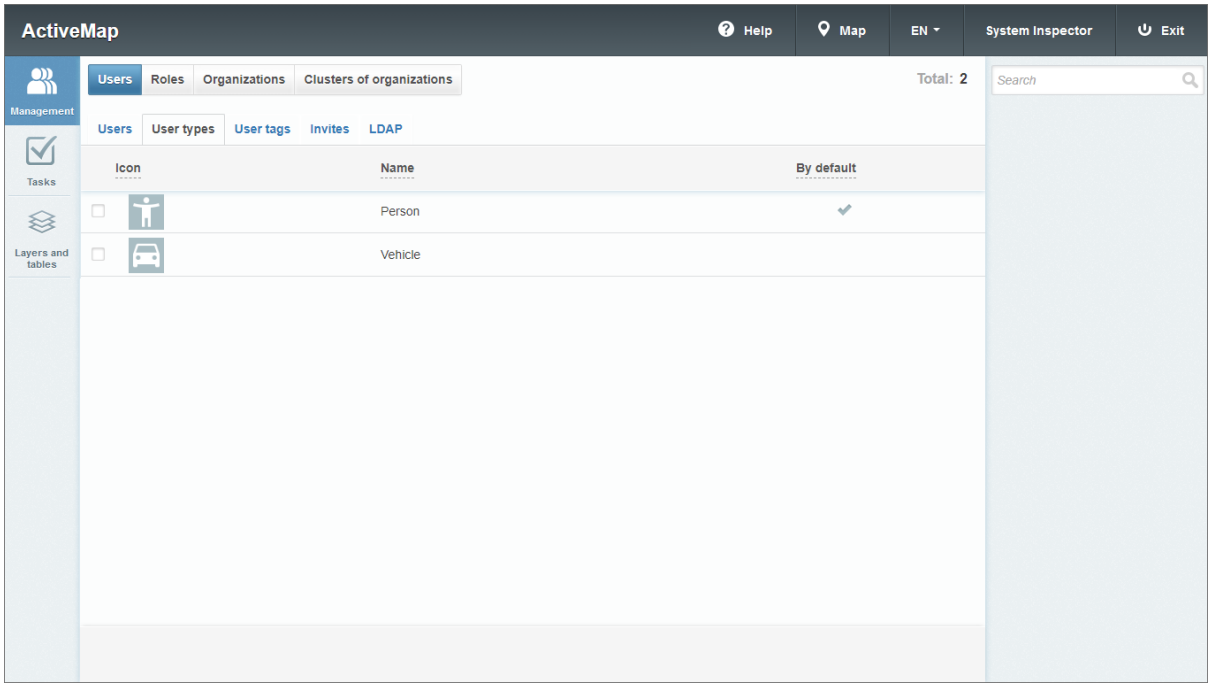


Fig. 2.71: “User types” tab

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 the default user type.

User tags

The tab contains a list of user labels with colors and names of the tags (Fig. 2.72). Tags display information about the user, in addition to the information provided by the system. For example, the user’s phone model.

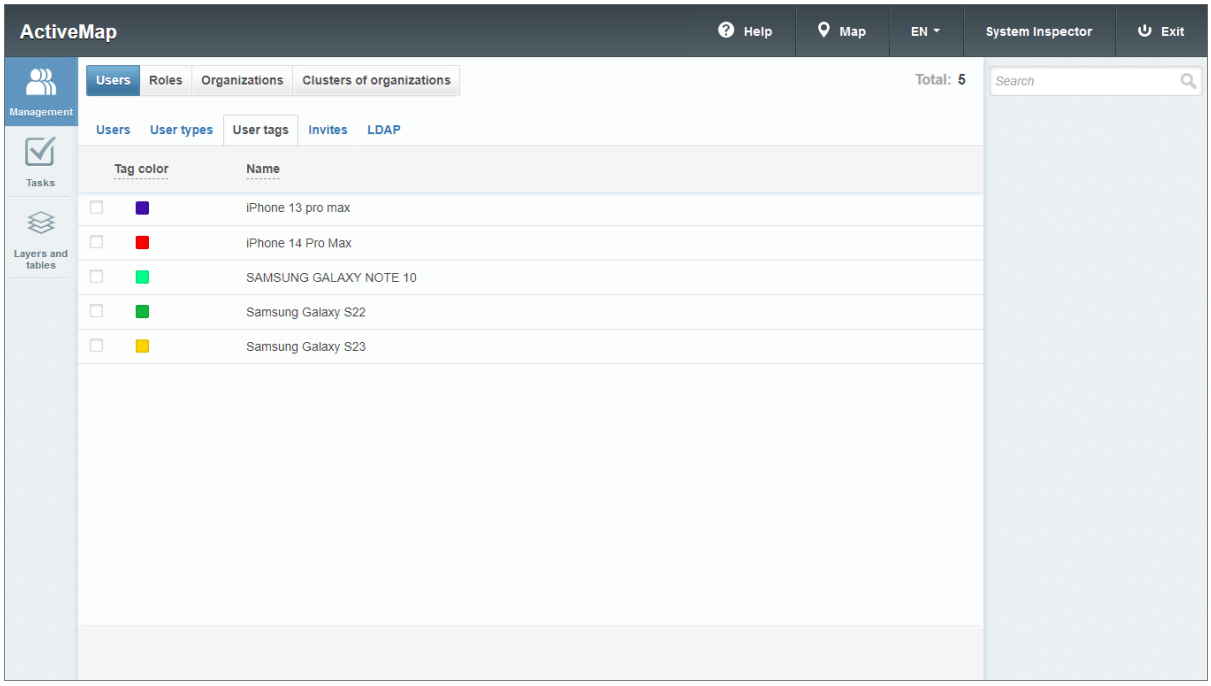


Fig. 2.72: “User tags” tab

Invites

The tab contains a list of invitations sent to the current user by the administrator (Fig. 2.73). Invitations are the links that allow users to log in to the ActiveMap Mobile without entering the server address, login, and password.

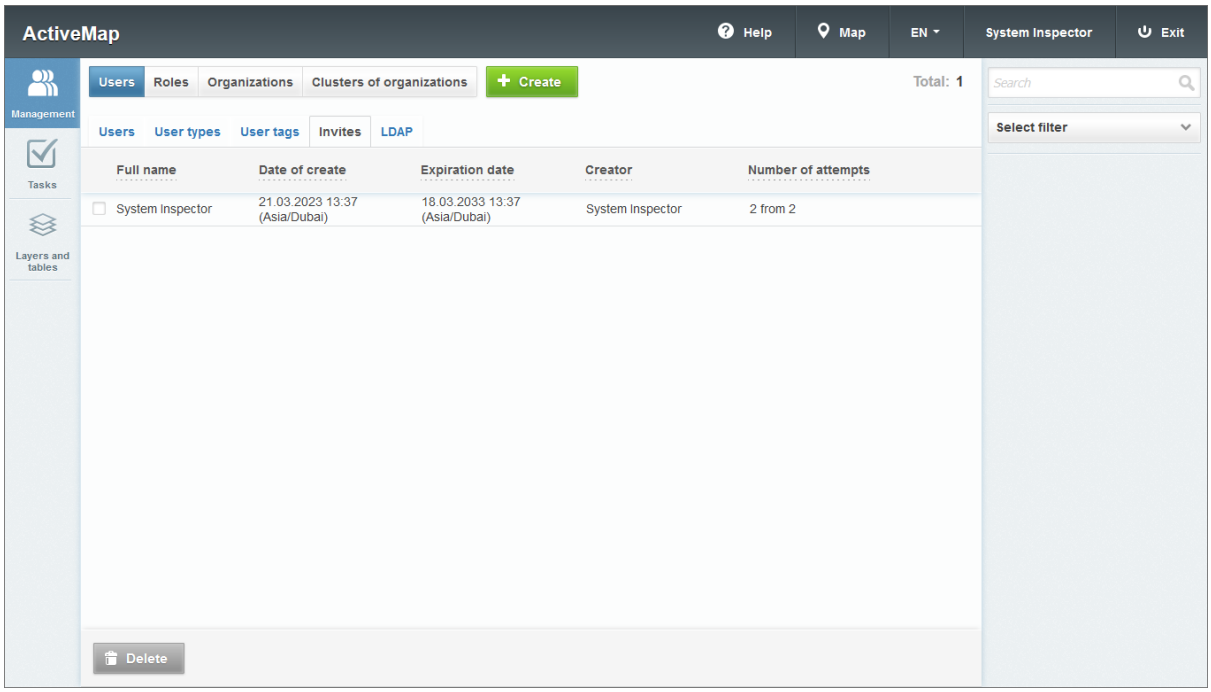


Fig. 2.73: “Invites” tab

Clicking displays basic information about the invitation with the ability to copy the link (Fig. 2.74).

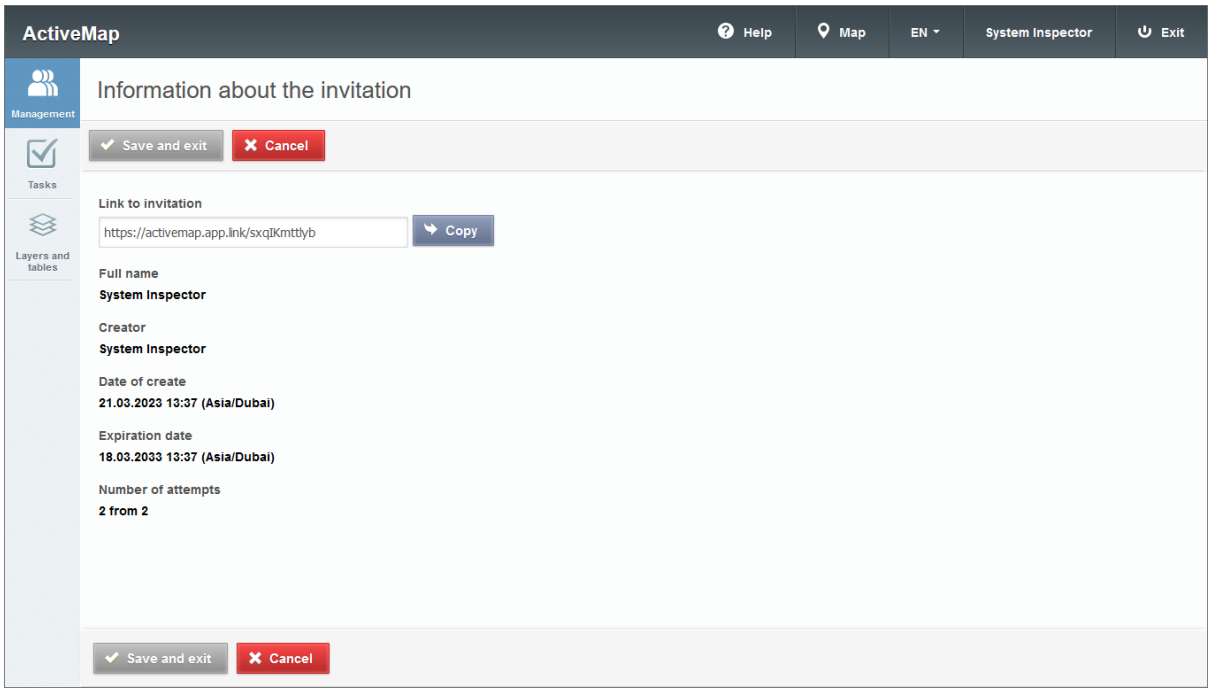


Fig. 2.74: Invitation info

Selecting opens a window where you can also copy the link (Fig. 2.75).

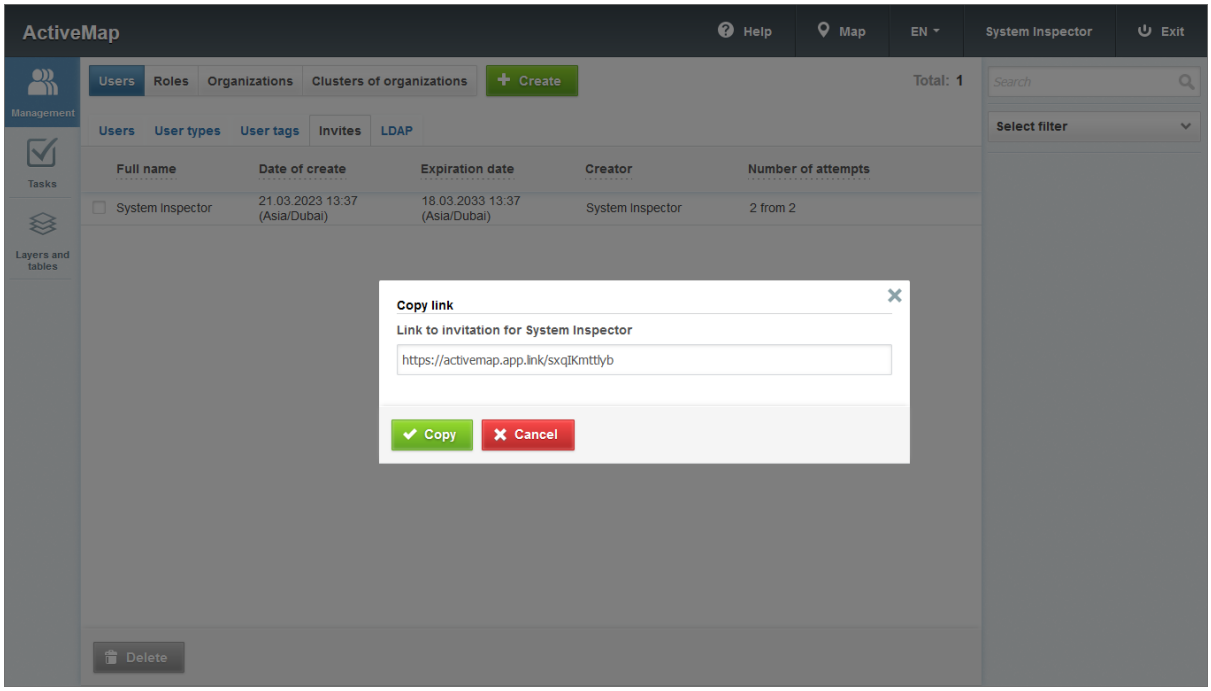
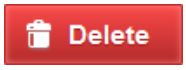


Fig. 2.75: Invitation link

Clicking removes the invitation from the list. You can also delete an invitation by selecting the required checkbox, after which the 

button becomes available.

You can also create an invitation in the current user editing window. To do this, go to the "Users" tab, hover the cursor over the line with the current user's name, and click . A user editing window opens. Here you can see the last active invitation link available for copying, if it was created earlier (Fig. 2.76).

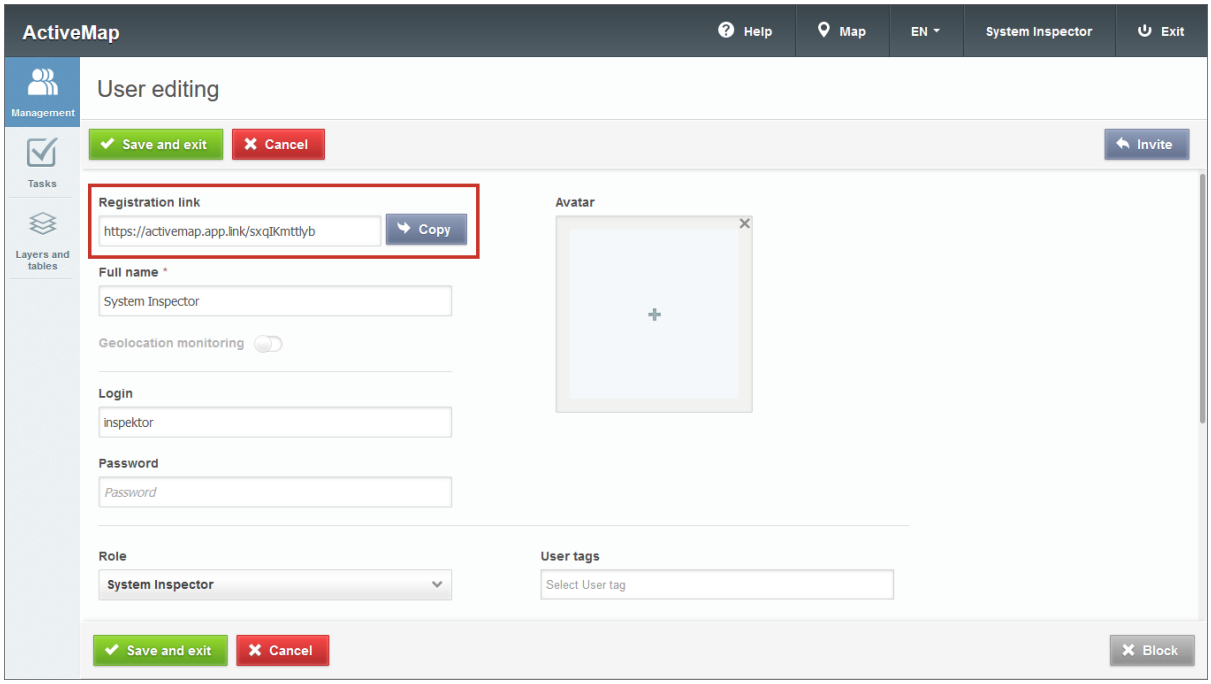
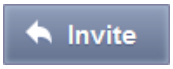


Fig. 2.76: User editing window

To create a new invitation, click 

and enter the required information in the pop-up window (Fig. 2.77).

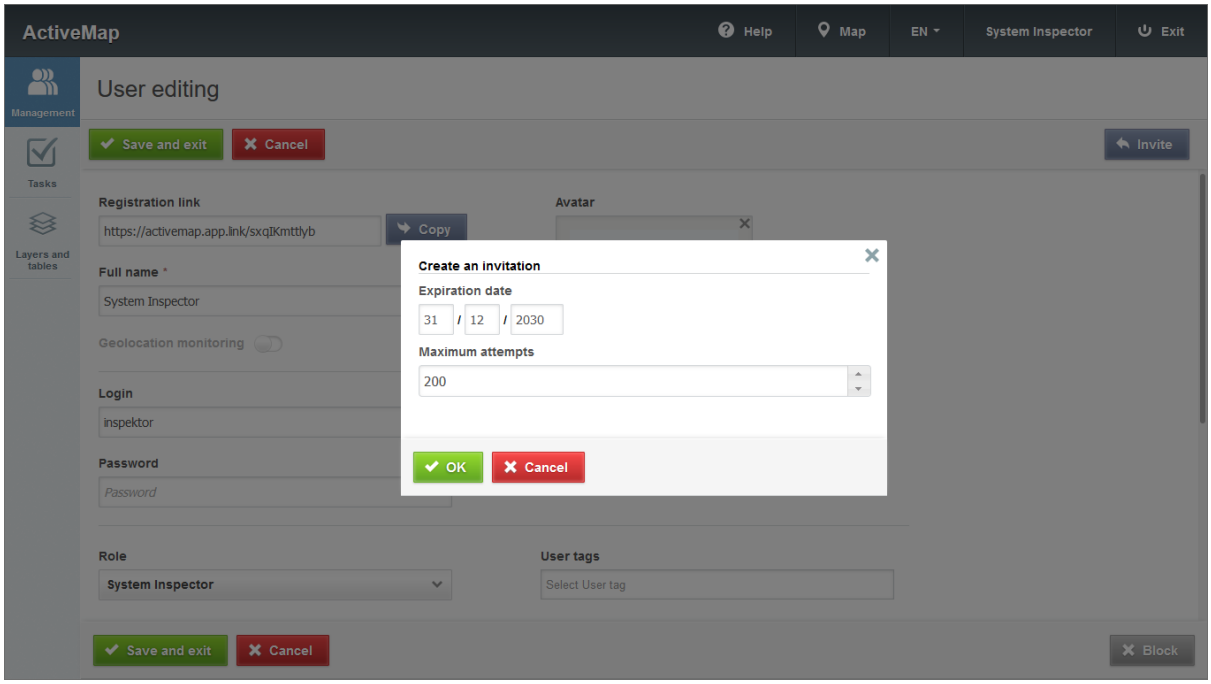


Fig. 2.77: Creating an invitation in the user editing window

LDAP

"LDAP" tab is available to users with roles of System Administrator, Cluster Administrator, Organization Administrator, System 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 that operates across all software products used in the organization. The ActiveMap system also supports the LDAP protocol by enabling the "Authorize via LDAP" toggle switch in the user settings. The "LDAP" tab (Fig. 2.78) 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.

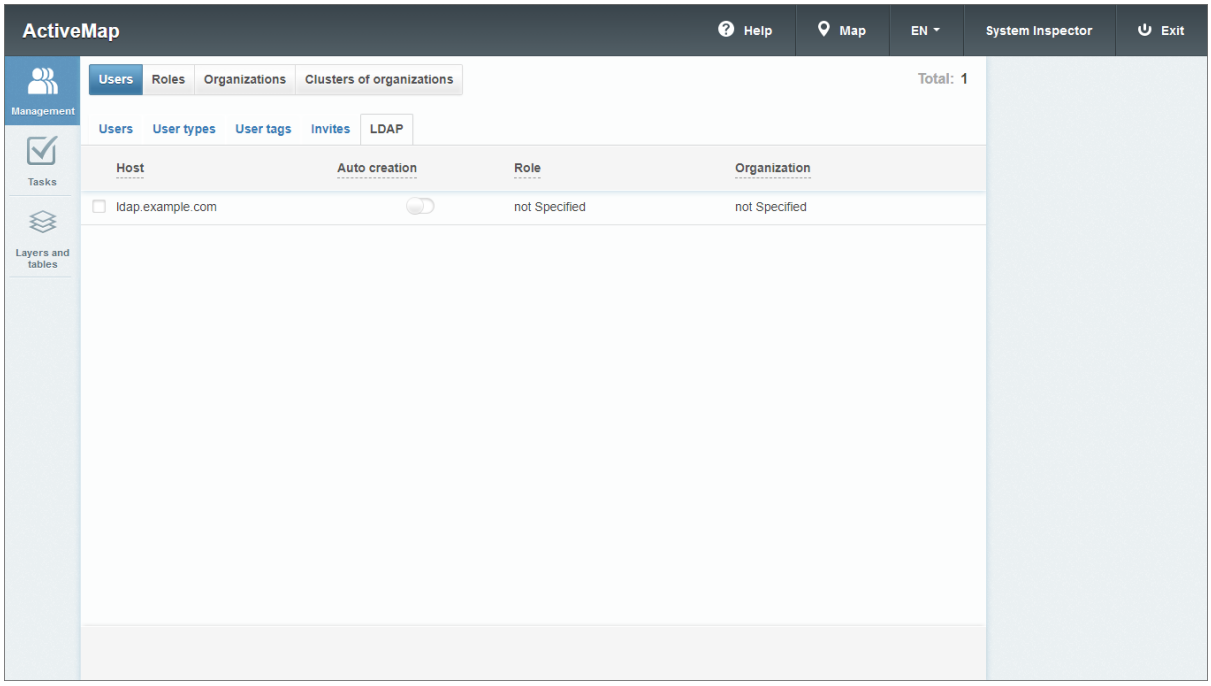


Fig. 2.78: Default LDAP configuration

“Roles” tab

The “Roles” tab displays a list of roles in the system (Fig. 2.79).

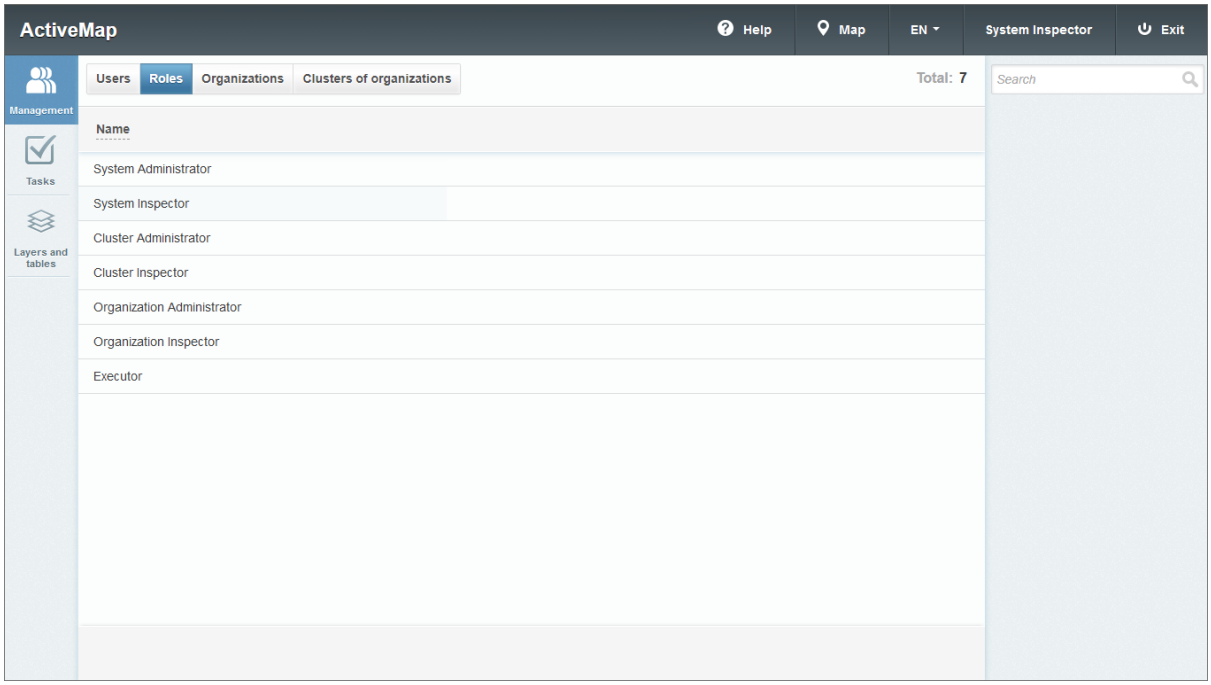


Fig. 2.79: “Roles” tab

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

- The **“System Administrator”** is responsible for the system configuration, including the management of clusters, organizations, users of all roles, contracts, directories, and for the distribution of access rights to the different layers and reports.
- The **“System Inspector”** manages the tasks of all clusters.
- The **“Cluster Administrator”** is responsible for administration of one or more specified clusters, namely: managing organizations and users, granting access rights to layers and reports, and managing tasks.
- The **“Cluster Inspector”** manages the tasks of one or more specified clusters.
- The **“Organization Administrator”** is responsible for administering the organization, namely: creating users, granting access rights to layers and reports within the organization, and managing tasks of the organization.
- The **“Organization Inspector”** manages the tasks of the organization.
- The **“Executor”** creates new tasks and executes the assigned tasks in the System.

“Organizations” tab

When switching to the “Organizations” tab, you can view a list of all existing organizations in the system (Fig. 2.80):

- “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.

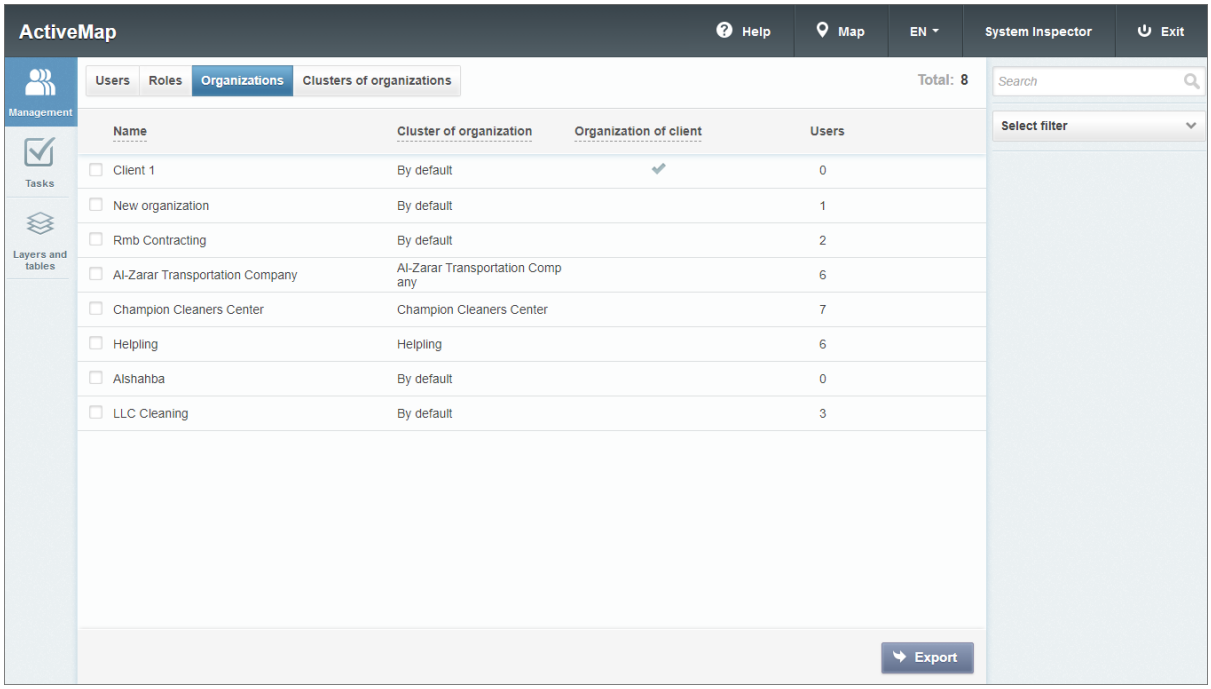


Fig. 2.80: “Organizations” tab

In the “Organizations” tab you can work with the search bar and filter. Users with the roles of the System, Cluster, and Organization Administrator, System, 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 and their time zones (Fig. 2.81).

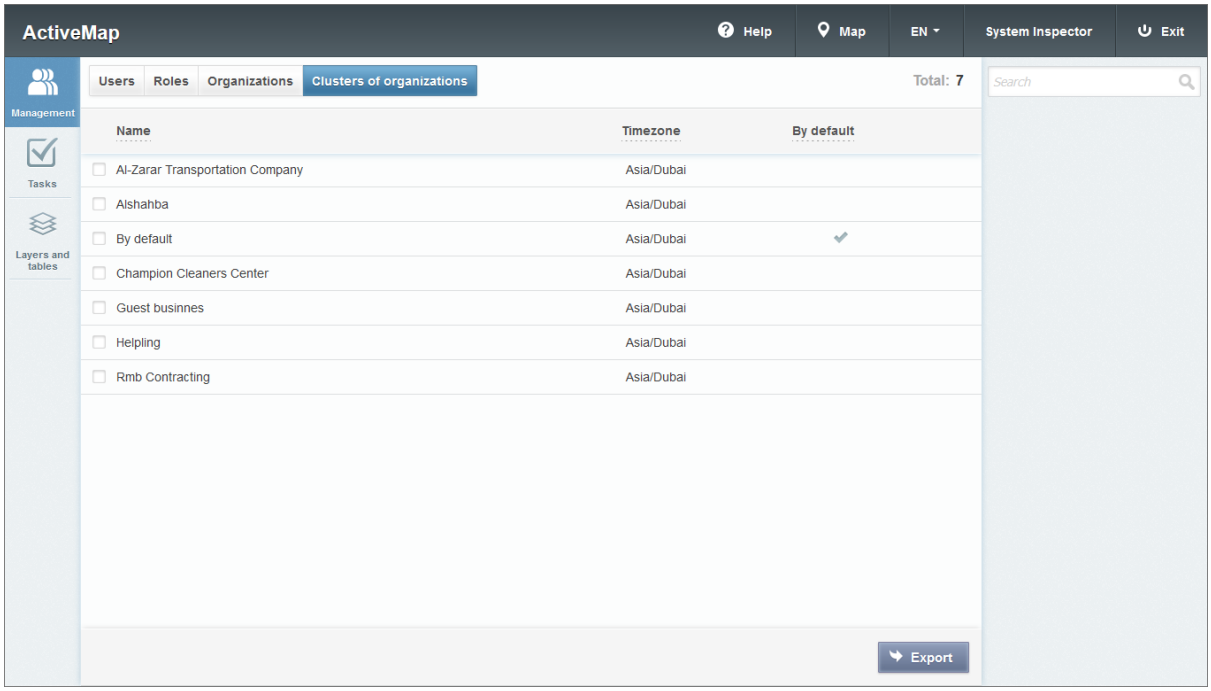


Fig. 2.81: “Clusters of organizations” tab

“Tasks” block

The “Tasks” block allows you to work with task parameters (Fig. 2.82).

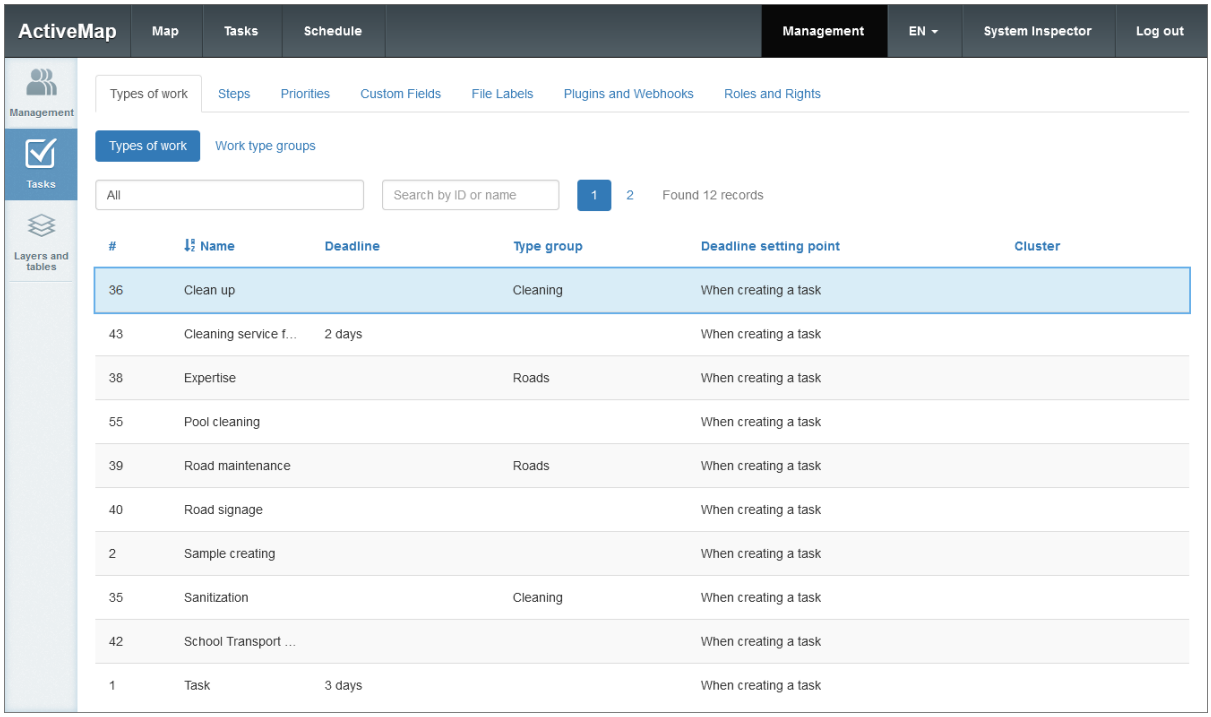


Fig. 2.82: “Tasks” block

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

- “Types”
- “Steps”
- “Priorities”
- “Custom Fields”
- “File Labels”

“Types” tab

By default, clicking “Tasks” opens the “Type” tab (Fig. 2.82). 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 is 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. 2.83).

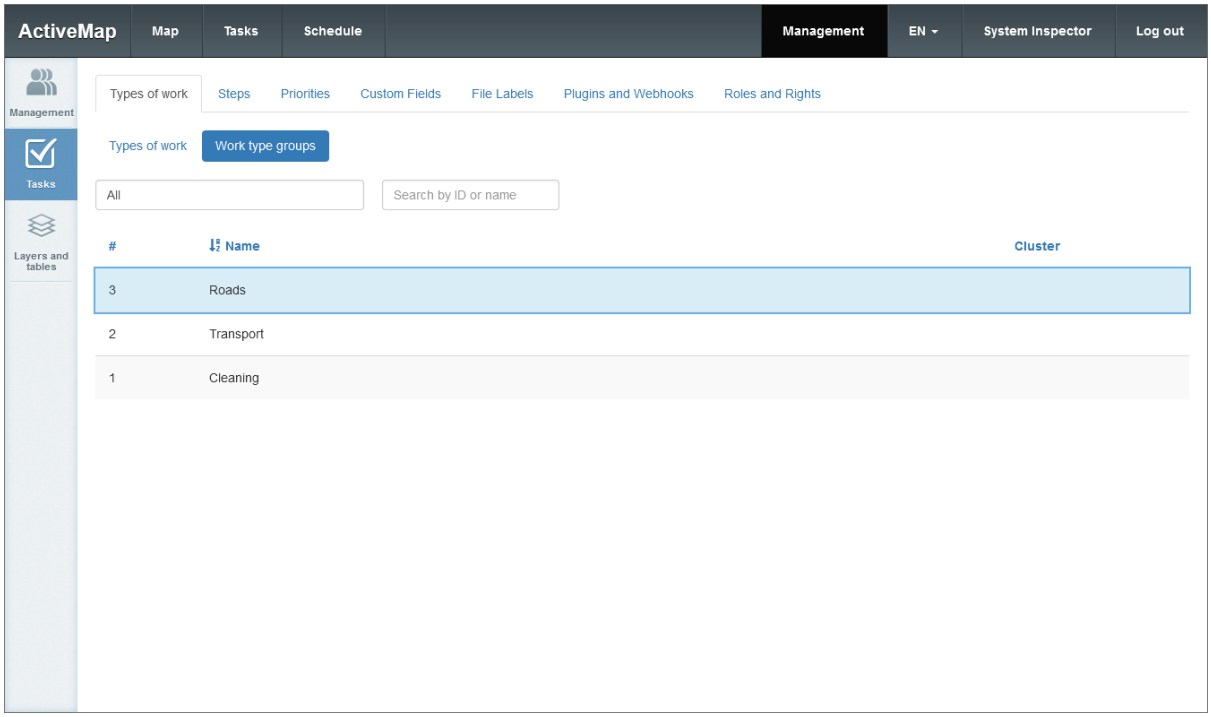


Fig. 2.83: “Work type groups” subsection

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. 2.84).

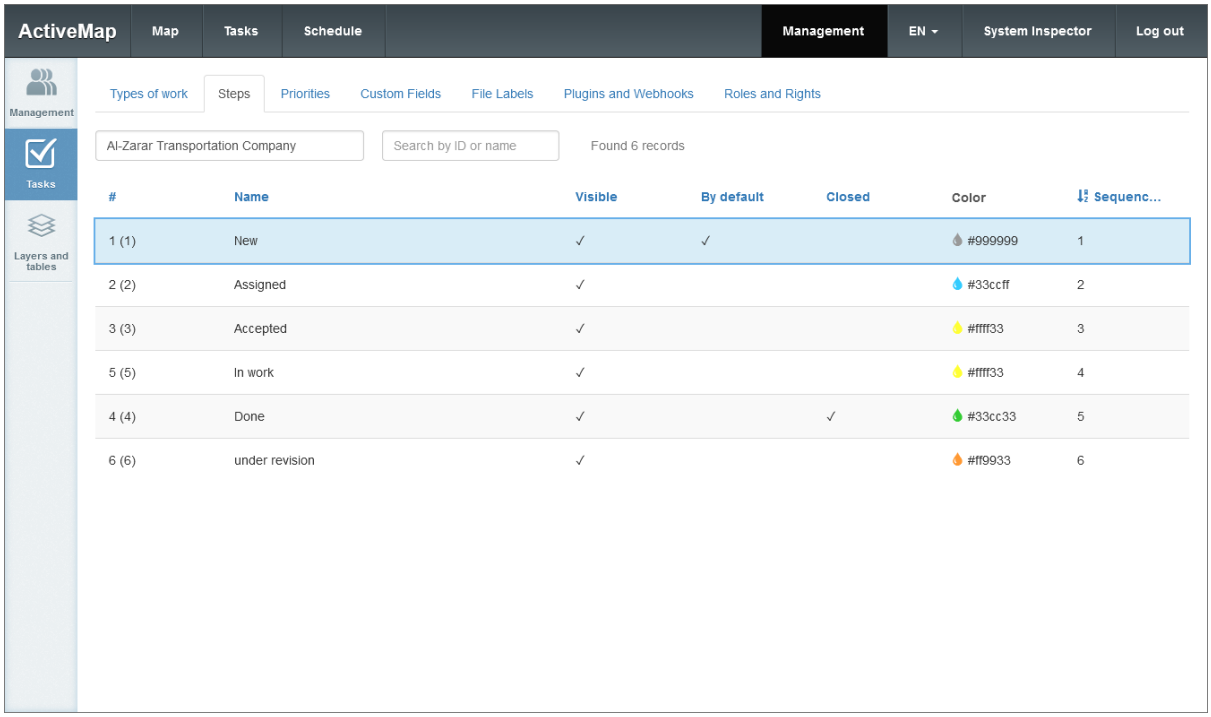


Fig. 2.84: Steps tab

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. 2.85). Priorities allow users to group work types by importance.

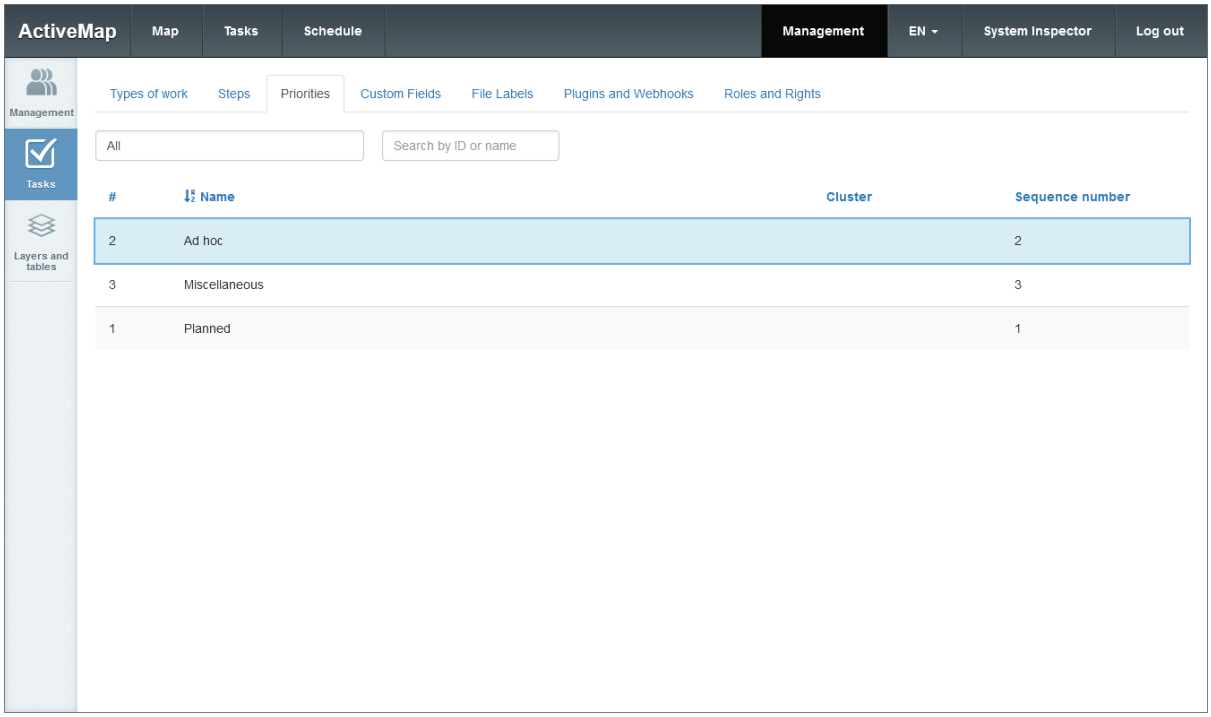


Fig. 2.85: Priorities tab

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. 2.86).

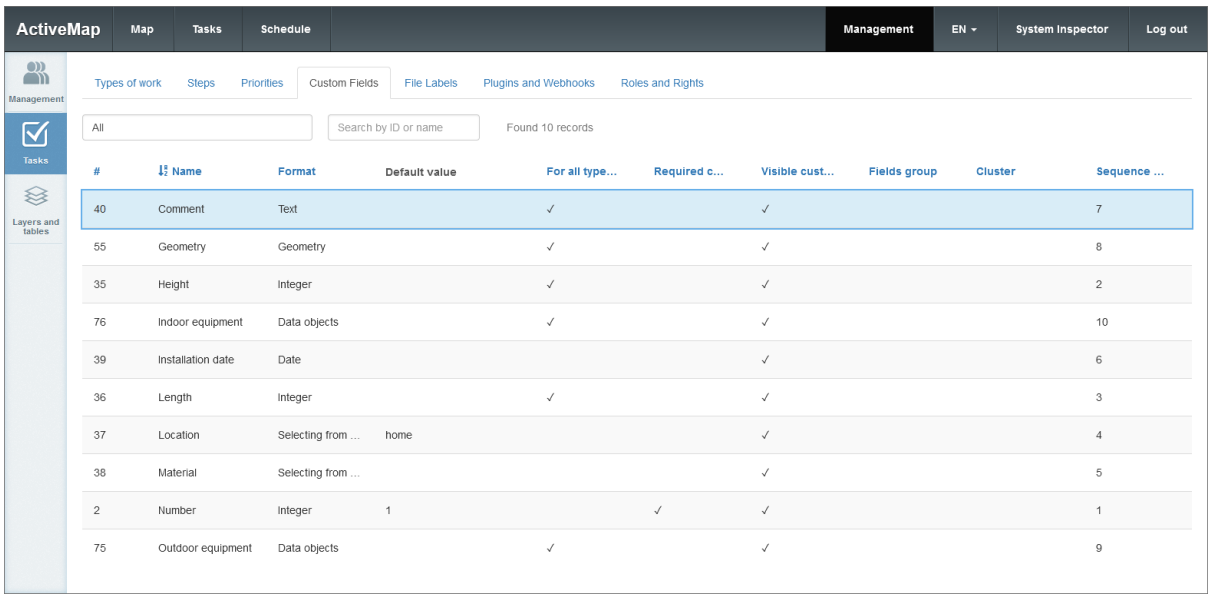


Fig. 2.86: "Custom fields" Tab

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, you can create a “Phone number” field to enter the client’s phone number.

Custom fields can be local (with binding to a particular cluster) and global (without binding).

The following formats of custom fields are supported:

- String – a short text;
- Text – an extended text;
- Integer number – an integer;
- Real number – a real numeric value;
- Date – date and time;
- Logical value – a choice from true and false options;
- Composite – a format that contains one or more nested fields and supports the creation of multiple field instances in a task card;
- Selection from the list – a format with the possibility of specifying a list of options;
- Phone number – a format with the possibility of calling a specified number from the task window;
- Barcode – a numeric decoding of barcode;
- Geometry – a format that contains information about the type of geometry (point, line, polygon) and coordinates of one or several objects;
- Data Objects – links to objects of layers, data tables or reference table (dictionaries);
- File – a format for adding files.

“File labels” tab

This tab displays a list of existing file labels (Fig. 2.87). Labels allows users 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.

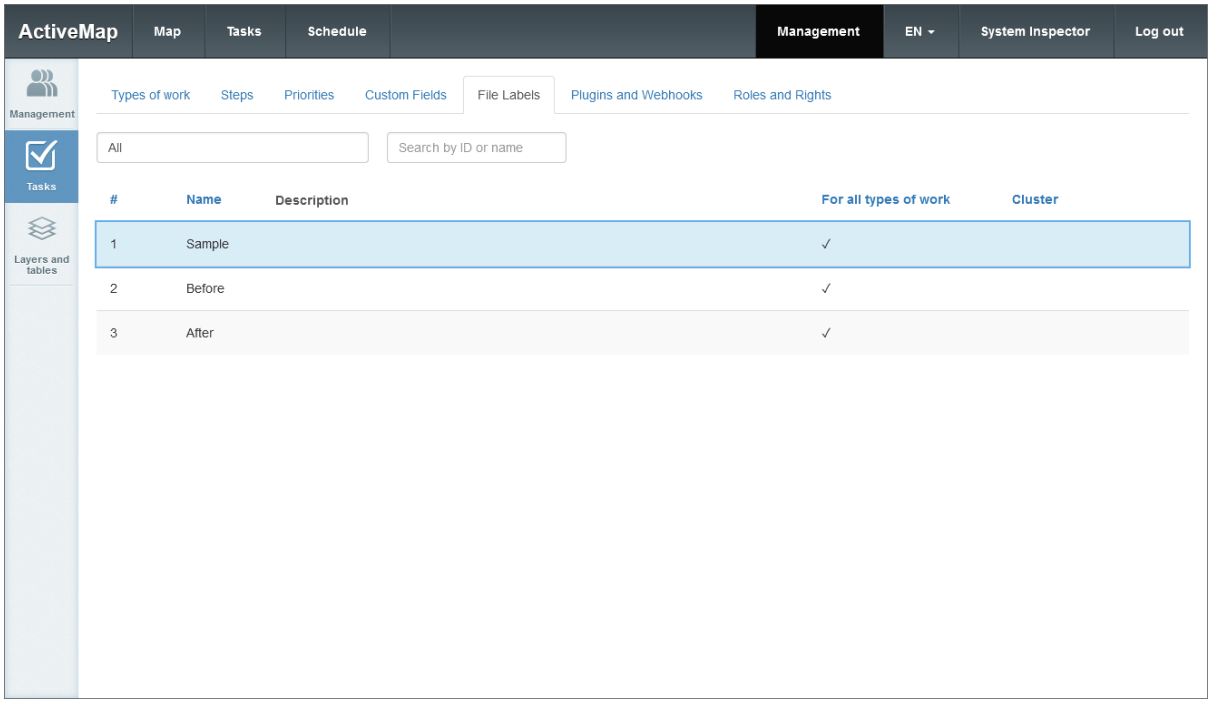


Fig. 2.87: “File labels” tab

“Layers and tables” block

The “Layers and tables” 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, and exporting data (Fig. 2.88).

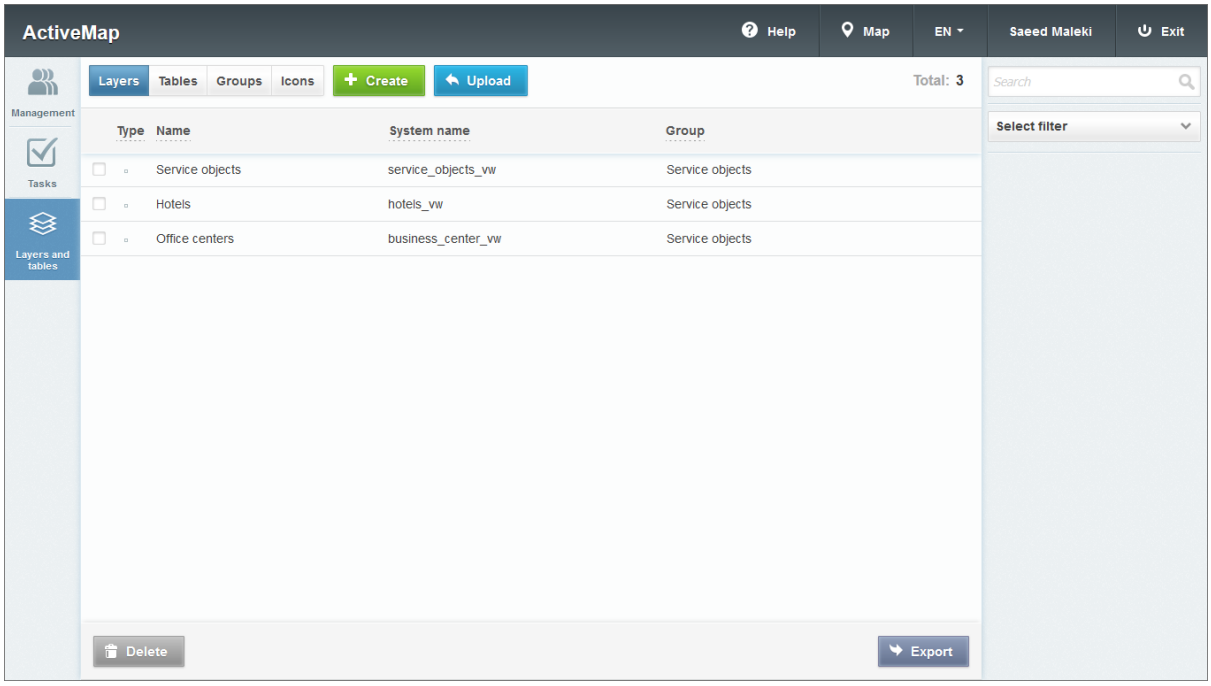


Fig. 2.88: “Layers” block

“Layers” tab

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

In the “Layers” tab, you can view detailed information about the system’s layers. When you switch to this tab, a table with the following columns becomes available (Fig. 2.88):

- “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 the 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 opens, containing the following tabs: “Main”, “Attributes”, and “Servicing Objects”.

“Main” tab

“Main” tab contains the following fields (Fig. 2.89):

- **Name** – name of the layer in the interface.
- **System name** – name of the layer in the database. It should consist of letters from the Latin alphabet, without spaces or special characters. It is generated automatically when entering information in the “Name” field. If a non-Latin script 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 does 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 is displayed.
- **Geometry type** – point, line, or polygon.
- **Layer protocol**:
  - WMS – providing information in the form of a geographically referenced images;
  - 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 layer display properties on the screen (color, size, transparency, and other properties of the layer objects and their labels).
- **Can edit the style** – the ability to switch between styles of different complexity (basic, simple, and advanced) during further layer editing.

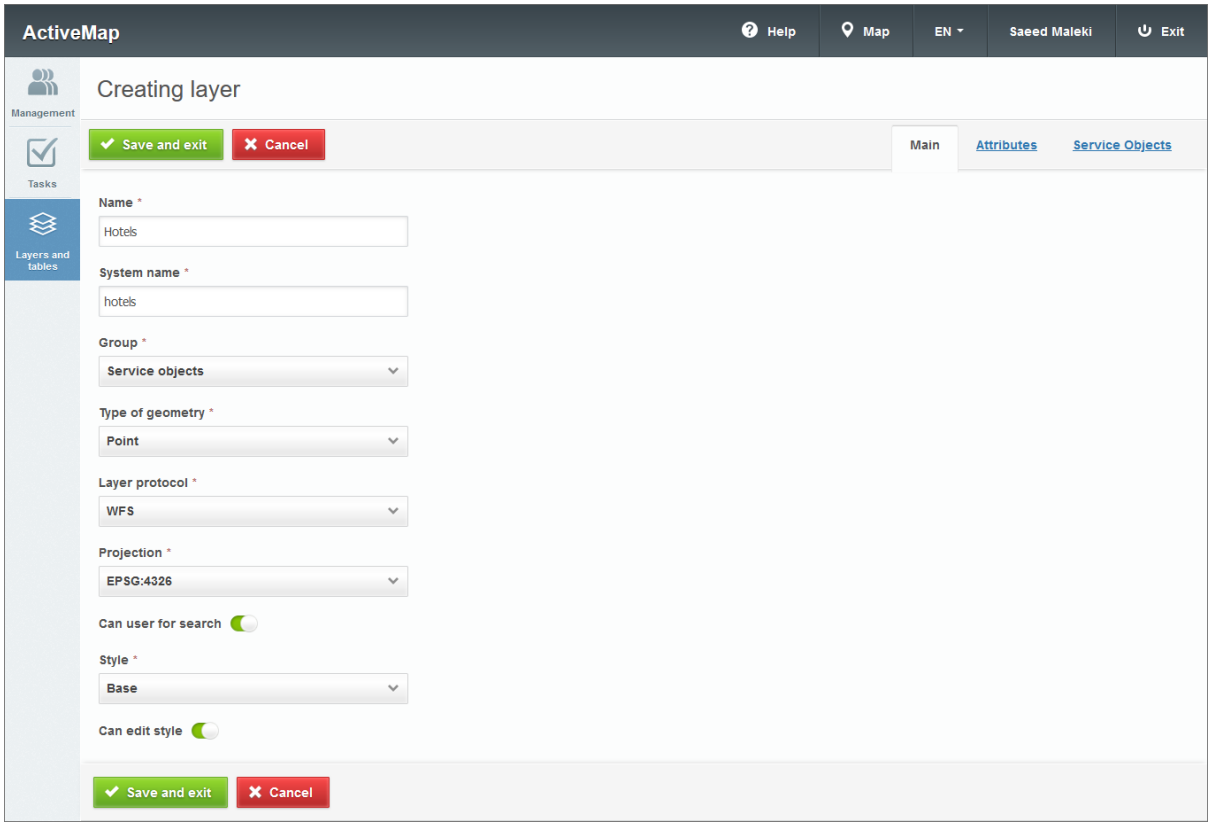


Fig. 2.89: Creating a layer, “Main” tab

When creating and editing a layer, you 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. 2.90).

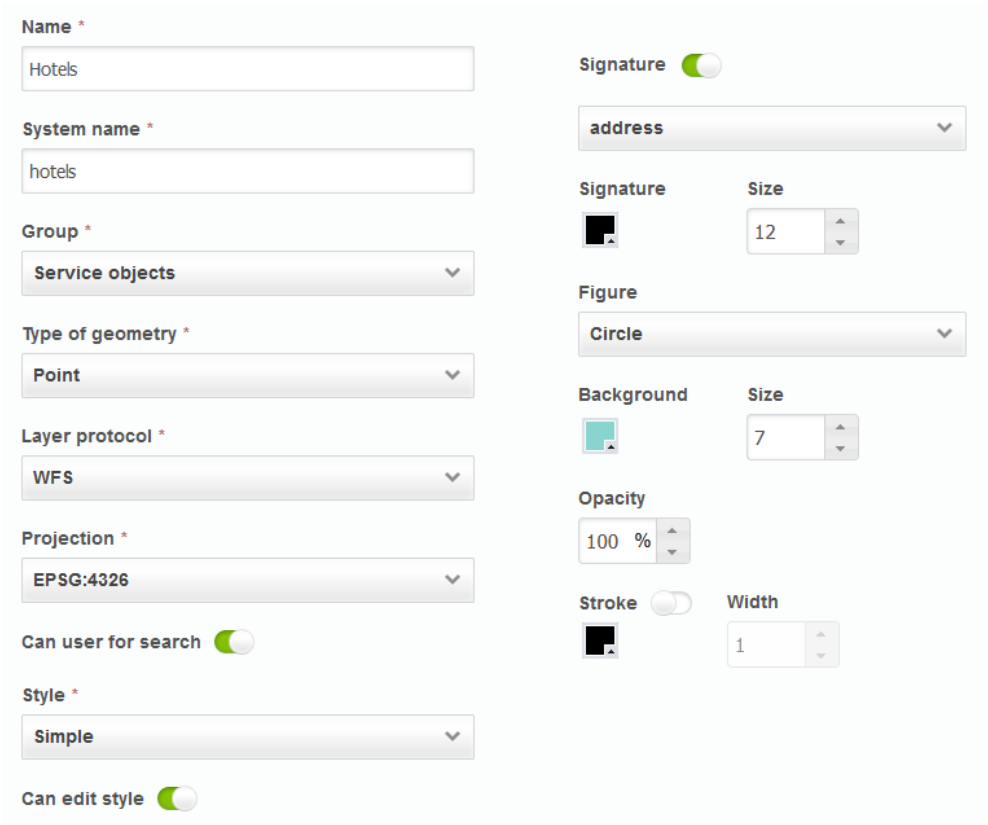


Fig. 2.90: Simple layer style

- **Advanced** – style generated using the GeoCSS language. When this style is selected, a separate form with a code (Fig. 2.91) appears to the right of the input fields.

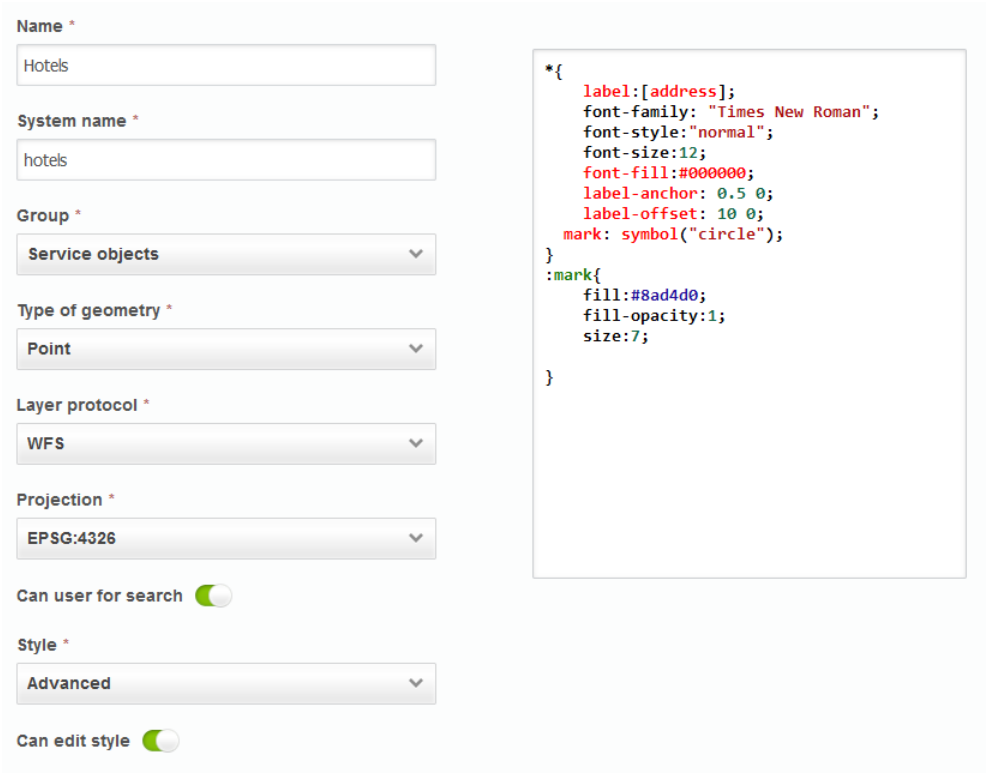


Fig. 2.91: Advanced layer style

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

If you select the 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 background transparency.

"Attributes" tab

To add new attributes to the layer being created, switch to the "Attributes" tab, fill in the "Name" and "Type" fields and click

(Fig. 2.92).

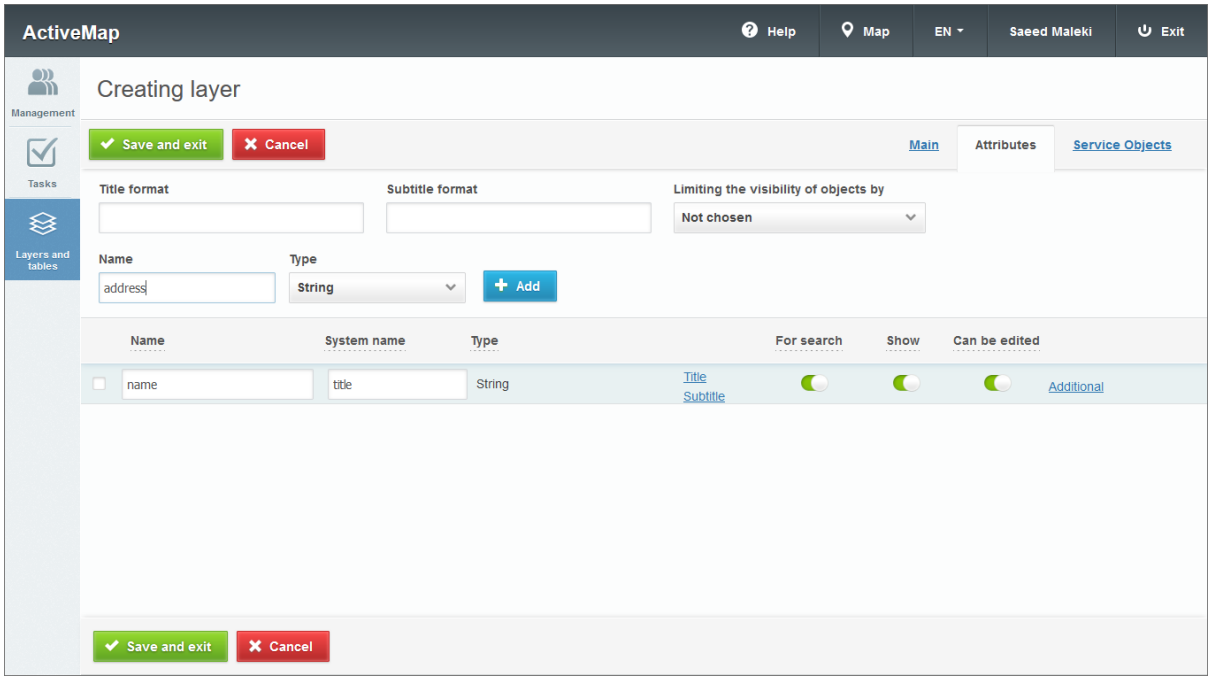


Fig. 2.92: Adding attribute data

The following types of attribute fields are supported:

- String – a text field;
- Integer – an integer field;
- Big integer – a numeric type that makes it possible to work with integers of arbitrary length;
- Boolean – a choice of true and false;
- Float – a field with a real numeric value;
- Date – selection of date from the calendar (day-month-year);
- Date and time – selection of date (day-month-year) and time (hours-minutes);
- Dictionary – selection from a list of values from the specified reference table (dictionary);
- Data table – selection from a list of values from the specified data table;
- Layers – selection from a list of objects from the specified layer;
- Organization connection – selection from a list of available organizations;
- Cluster connection – selection from a list of available clusters;
- User connection – selection from a list of available users;
- Work type connection – selection from a list of available work types;
- Priority connection – selection from a list of available work priorities.
- RFID tag – a text field for storing information obtained by scanning the tag in the ActiveMap Mobile Android mobile application.

After creating an attribute, a table with the name, system name, and attribute type opens in the administration area. The system name is automatically assigned to the attribute based on transliteration of the entered name or based on the type for the following attribute types:

- Organization connection – sys_org_id
- Cluster connection – sys_clr_id
- User connection – sys_user_id
- Work type connection – sys_typ_id
- Priority connection – sys_prt_id

If there are several fields in a layer with one of the specified types, then {current date} is automatically added at the end of the system attribute name.

New attribute appears in the first line of the table (Fig. 2.92). The following actions are available to the user:

- Changing the attribute's name.
- Defining additional parameters of the attribute:
  - "Title" – makes the attribute the title of the object's card displayed when you click on the object on the map.
  - "Subtitle" – makes the attribute the subtitle of the object's card displayed when you click on the object on the map.
  - "For search" – makes the attribute available for search.
  - "View" – makes the attribute visible for users.
  - "Can be edited" – makes the attribute editable.

  To see two more parameters, click "Additional" (Fig. 2.93):
  - "HTML escape" – interprets the attribute as HTML content (expands the possibilities of filling in attribute fields, for example, their content can be a link or a formatted text).
  - "View in pop-up window" – shows the attribute in the object's card that is displayed when you click on the object on the map.

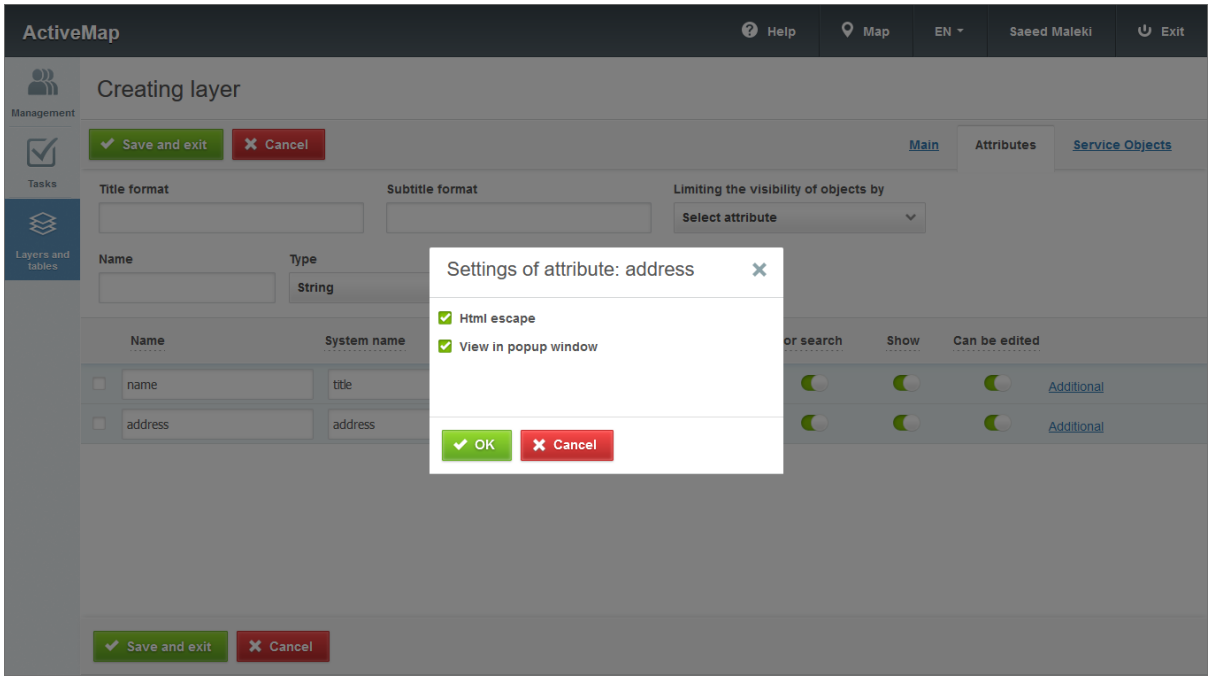


Fig. 2.93: Additional attribute parameters

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

.

In the upper part of the window, there are the “Title format” and the “Subtitle format” fields. You can form the title/subtitle using a mask for the layer from one or several attributes. To set up a new mask, click “Title” or “Subtitle” on the desired attribute (Fig. 2.94). You can add a brief explanation for better perception.

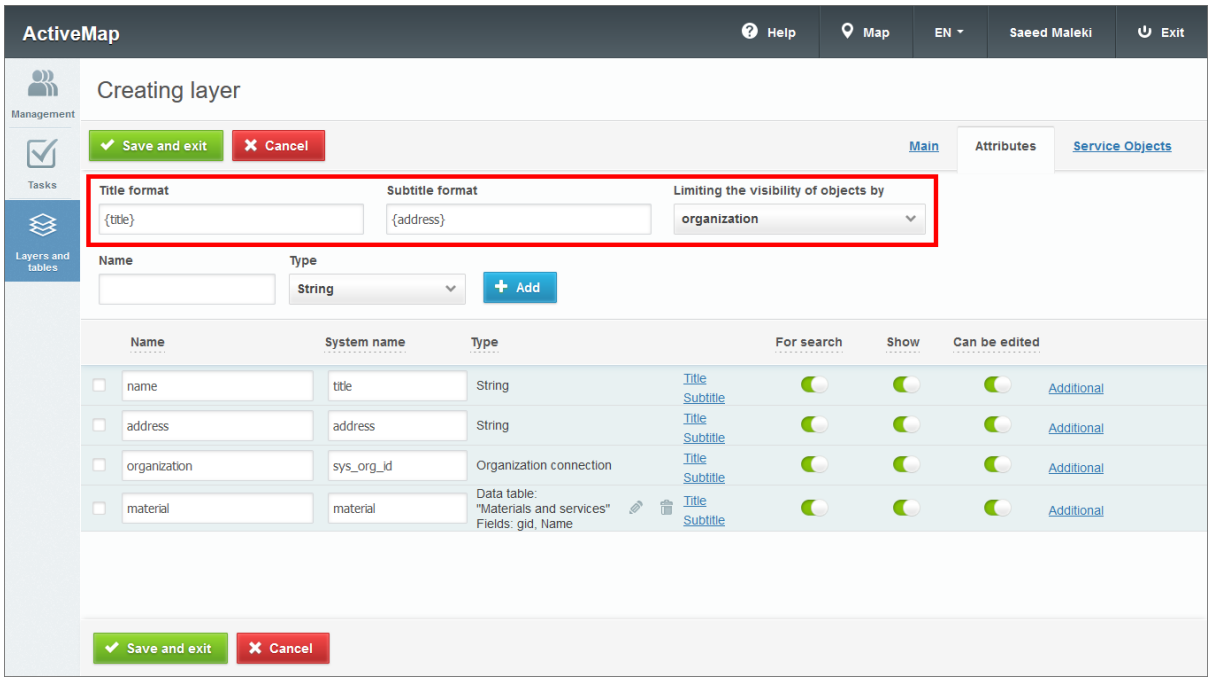


Fig. 2.94: Example of setting a title and subtitle mask and limiting the visibility of objects by organization

You can limit the visibility of objects of the same layer for different clusters, organizations, and users in the system. To do this, you have to:

1. Create a field with one of the following data types: “Organization connection”, “Cluster connection”, or “User connection”.
2. Select its name from the drop-down list in the “Limit the visibility of objects by” field at the top of the window.
3. After saving the layer attribute structure, fill the connection field with values by selecting from the drop-down list (Fig. 2.94).

Objects of this layer are visible only for the users of the cluster (or organization) specified in this field or for the users listed in the “User connection” field.

Users with “System Administrator” and “System Inspector” roles can leave the system filter field empty when creating an object and the object becomes 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. The object is accessible only to users of this organization or cluster.

To facilitate the process of filling the created attribute fields and to filter objects on the map by attribute values, you can set the link to a reference table, to a data table, or other thematic layers. To do this, create a table in the “Tables” tab of the “Layers” block (*“Tables” tab* (page 92)) and select “Reference table (dictionary)” or “Data Table” as the field type of the current layer. To link to a thematic layer, select the “Layers” type and select the thematic layer. A drop-down list with the names of available tables appears to the right of the field type. After selecting a particular table, specify the “Field with value” with “Integer” data type (the source field for the link) and the “Field with name” with “String” data type (the field that stores the names of the elements) (Fig. 2.95).

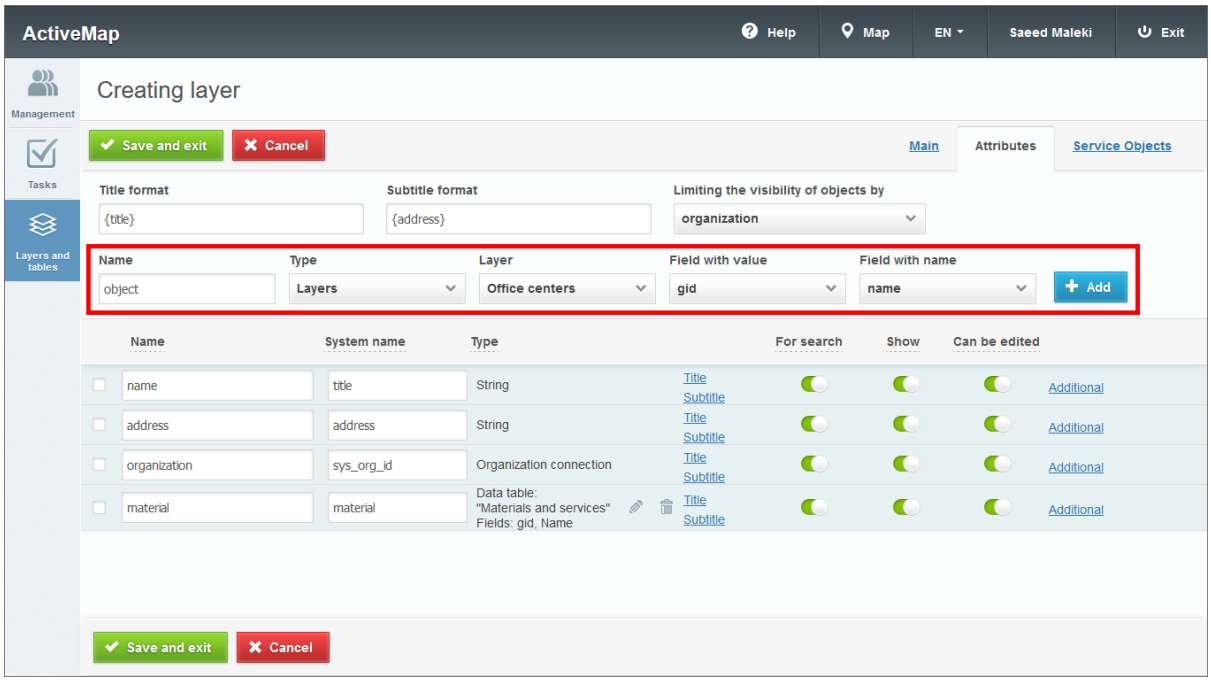


Fig. 2.95: Setting a link to a layer

After attaching a layer, dictionary, or data table (Fig. 2.96) you can select one of the values from the drop-down list instead of entering an attribute value when creating new layer objects and when filtering.

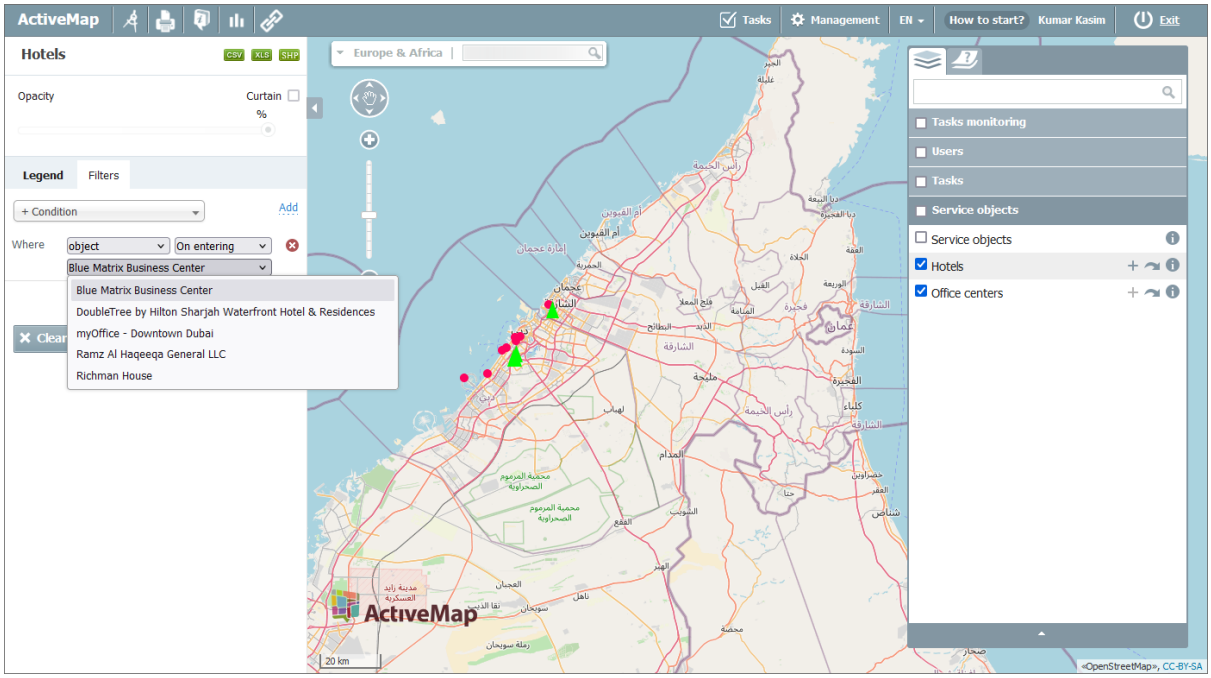


Fig. 2.96: Filtering layer objects

Fields with “Cluster connection”, “Organization connection”, “User connection”, “Work type connection”, and “Priority connection” types allow you to connect system reference tables (dictionaries). System dictionaries are generated automatically based on data entered into the system.

“Service objects” tab

In this tab you can set the mapping between the fields of this layer and the fields of tasks that are created based on the service objects (Fig. 2.97). This means that when creating tasks with a link to service objects, all or part of the task fields is automatically filled with data about this service object. The mapping determines which fields it is.

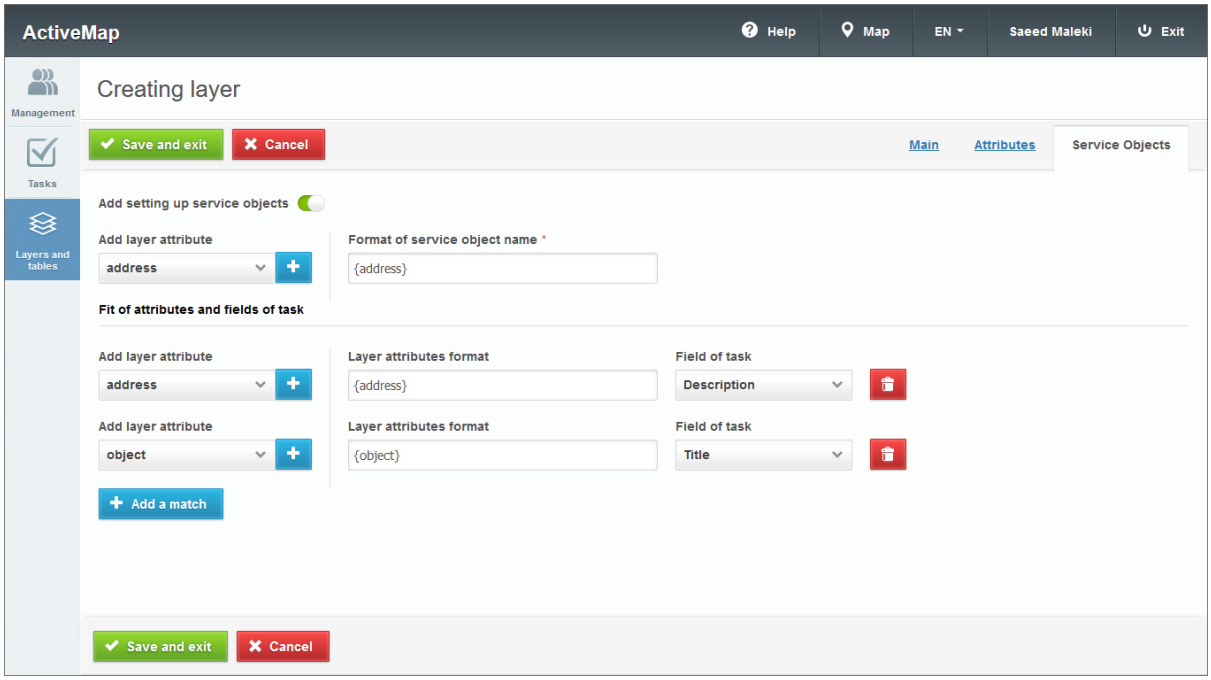


Fig. 2.97: "Service objects" tab

To configure service objects, toggle the corresponding switch. Then select an attribute for the service object name from the layer fields and click . Name format is based on its mask. It can consist of several attributes. For this, you have to create a corresponding mask by adding new attributes. Then 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.

Uploading a layer

To upload a layer into the system, click at the top of the "Layers" tab. A pop-up window appears where you can select a layer from the computer. You can upload archived vector shape files in zip format and georeferenced raster images in GeoTIFF format.

Layer uploading includes the following steps:

- Preliminary import,
- Setting layer parameters,
- Creating a layer in the system based on the imported data.

Preliminary import starts immediately after selecting a file to upload. You can see the import progress in the current window (Fig. 2.98).

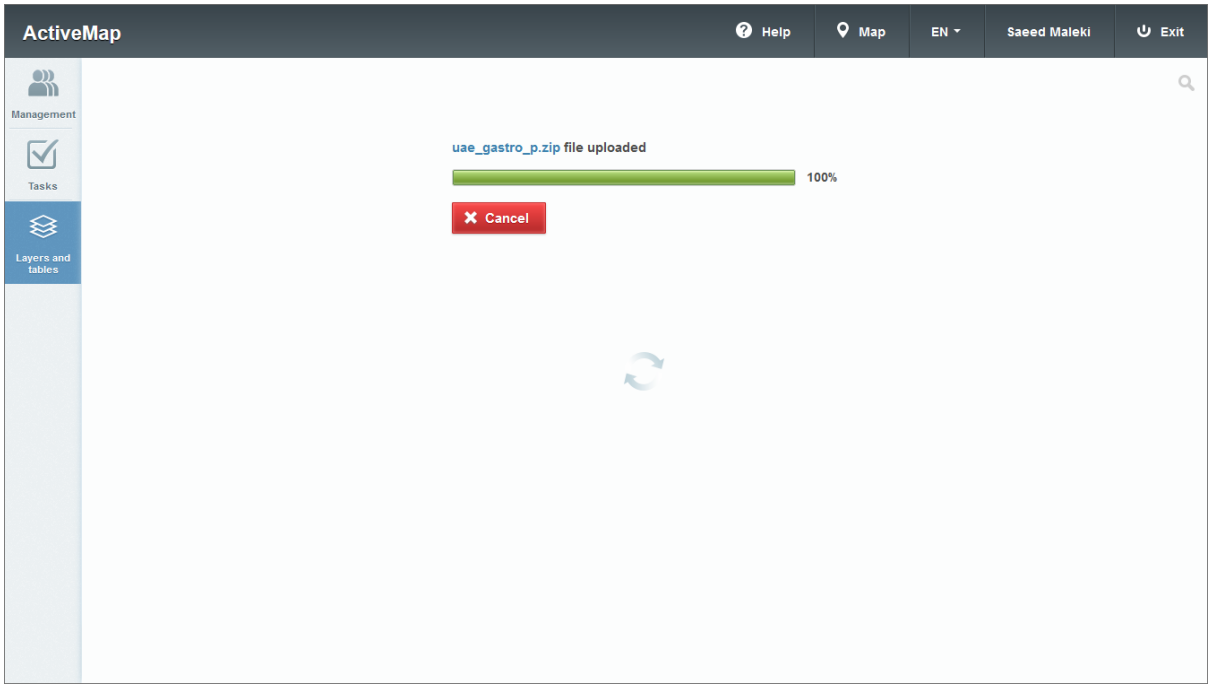


Fig. 2.98: Progress of preliminary layer import

Uploading vector layers

After the preliminary import, the same window opens as when creating a layer (Fig. 2.99). In the "Main" tab, the geometry type is automatically determined. You have to fill in the remaining fields.

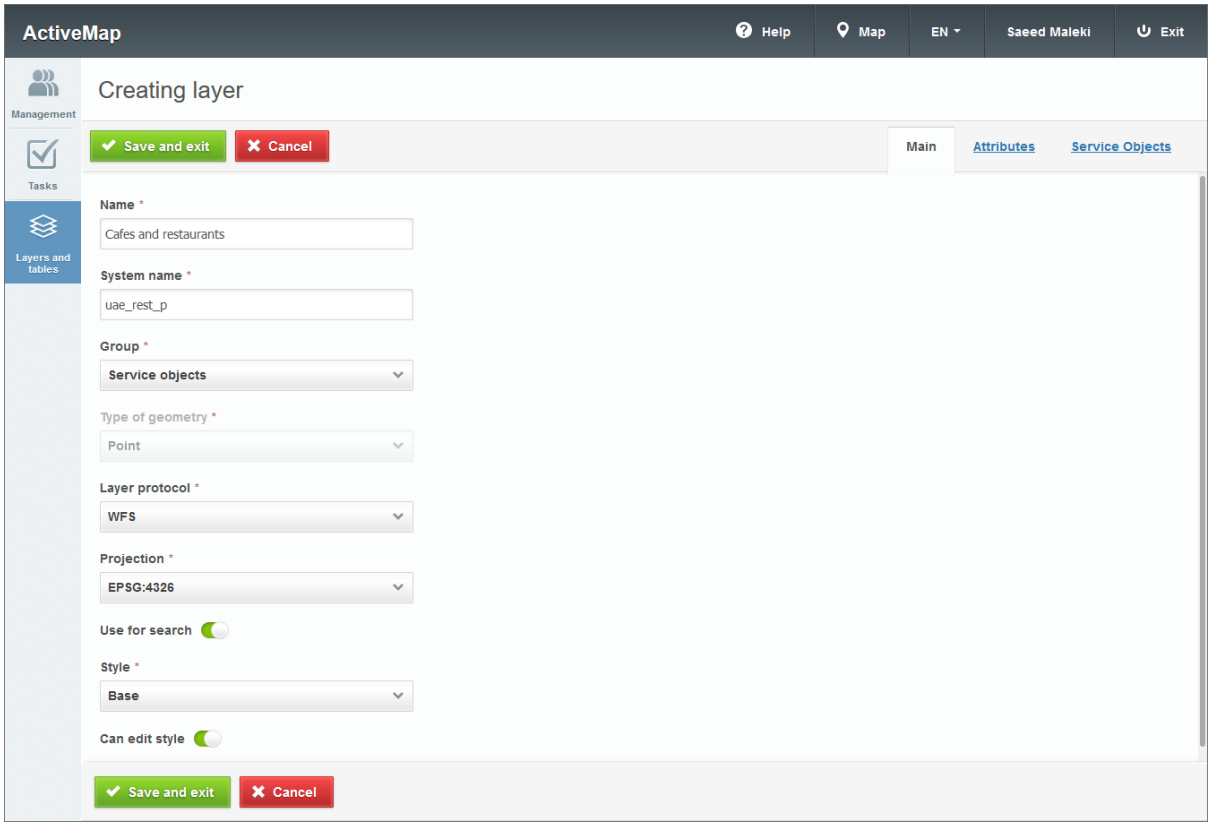


Fig. 2.99: Main parameters of the uploaded vector layer

The "Attributes" tab shows the attribute fields of the imported layer (Fig. 2.100). You cannot delete them at this step before creating a layer. You can only configure their display parameters and add new fields if necessary. New fields will be empty. You can fill them after creating a layer in the system.

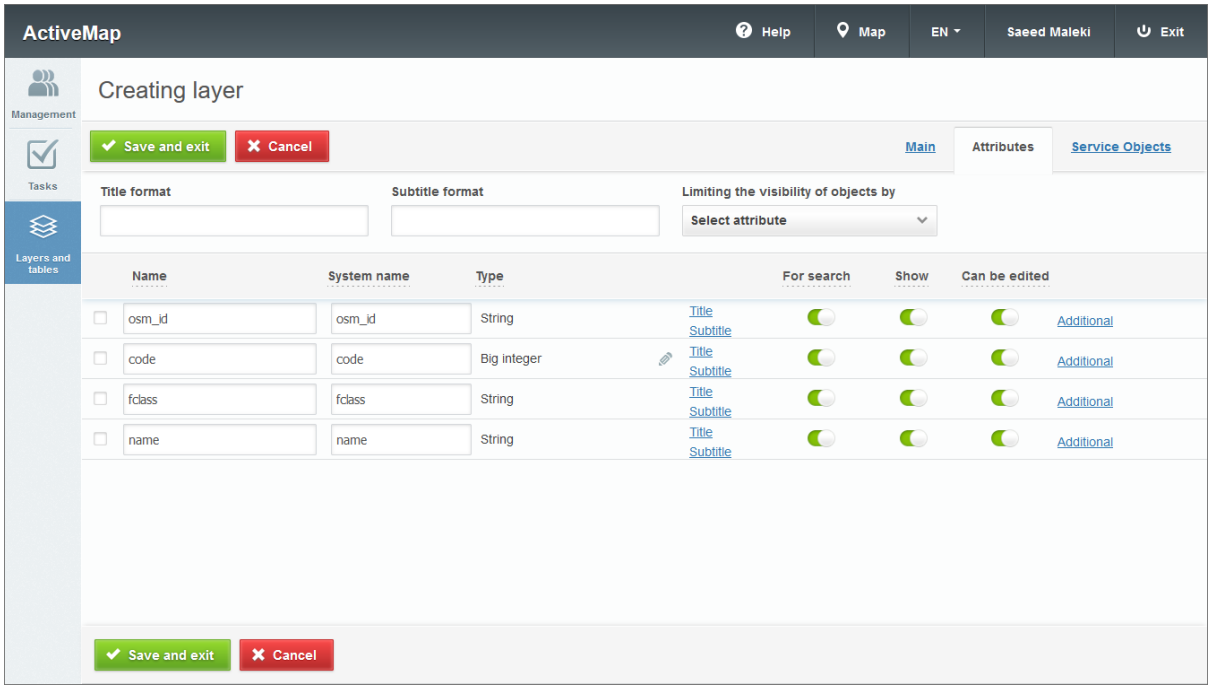
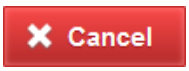


Fig. 2.100: Attributes of the uploaded vector layer

When importing a layer from a shapefile, the system automatically identifies some attribute types if the attribute field name starts with the following words:

- sys_org_id – "Organization connection" type
- sys_clr_id – "Cluster connection" type
- sys_usr_id – "User connection" type
- sys_typ_id – "Work type connection" type
- sys_prt_id – "Priority connection" type

Setting up service objects and default rights is done in the same way as when creating a layer. After setting all the parameters, click

to complete the import and create a new layer in the system, or click 

to cancel the import.

The stages of creating a vector layer are displayed in the information window (Fig. 2.101).

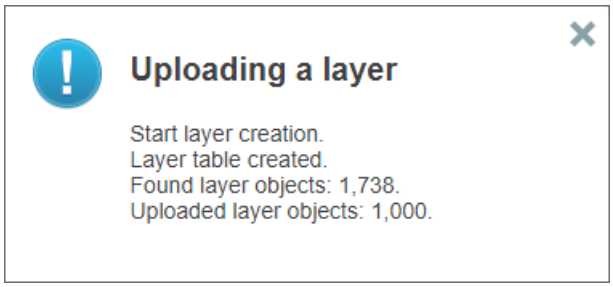


Fig. 2.101: Stages of vector layer creation

Uploading raster layers

Before uploading raster images, it is recommended to compress the GeoTIFF file (LZW compression) and build pyramids for it. You can do it using the tools of the GDAL library (https://gdal.org/). After the preliminary import is completed, the layer creation window opens (Fig. 2.102).

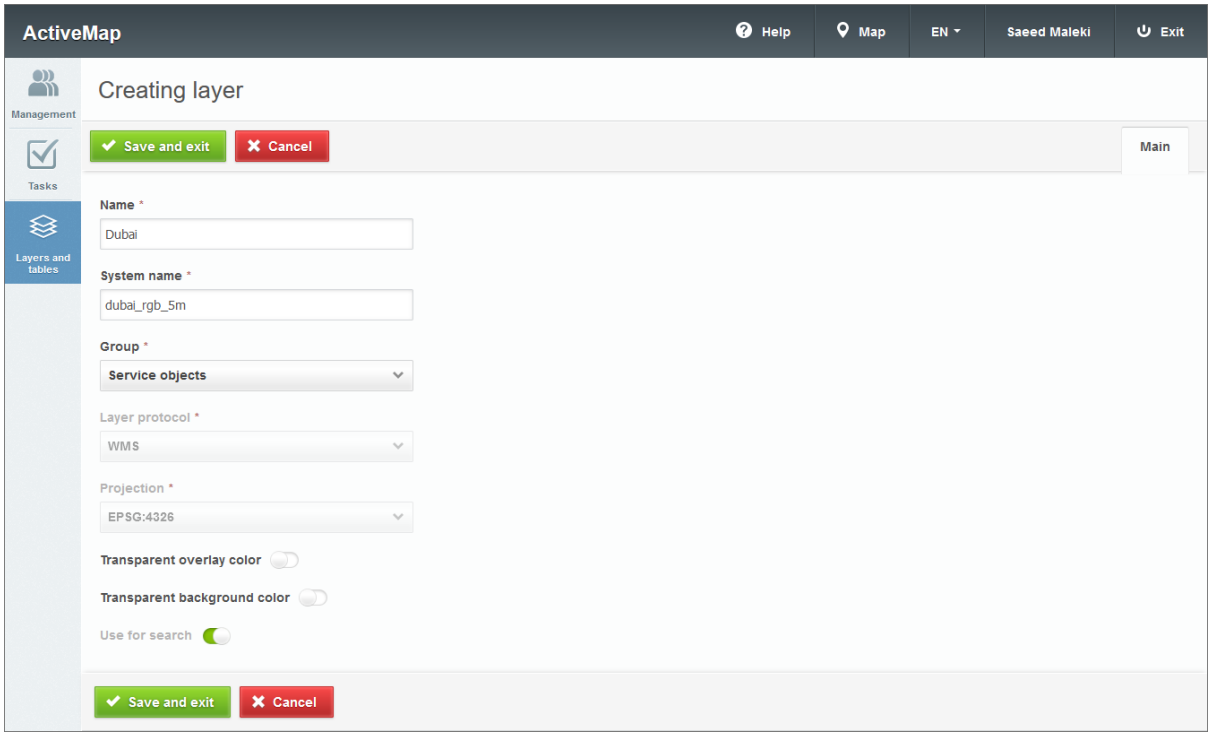


Fig. 2.102: Main parameters of the uploaded raster layer

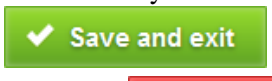
In the “Main” tab, the layer display protocol (WMS) and the EPSG projection code are automatically determined. You have to fill in the following fields:

- Layer cluster
- Name
- System name
- Group

You can enable transparency display for different parts of the raster using the following flags:

- Transparent overlay color
- Transparent background color

As a rule, they are used for raster schemes and drawings.

The default rights are set up in the same way as when creating a layer. After setting all the parameters, click 

to complete the import and create a new layer in the system, or click

to cancel the import. The stages of creating a raster layer are displayed in the information window, as when loading a vector layer.

Editing a layer

To edit a layer, click or double-click on the row with the selected layer name. A form (similar to the add form) opens in the administration area. Here you can fill in/change the fields of the layer (Fig. 2.103).

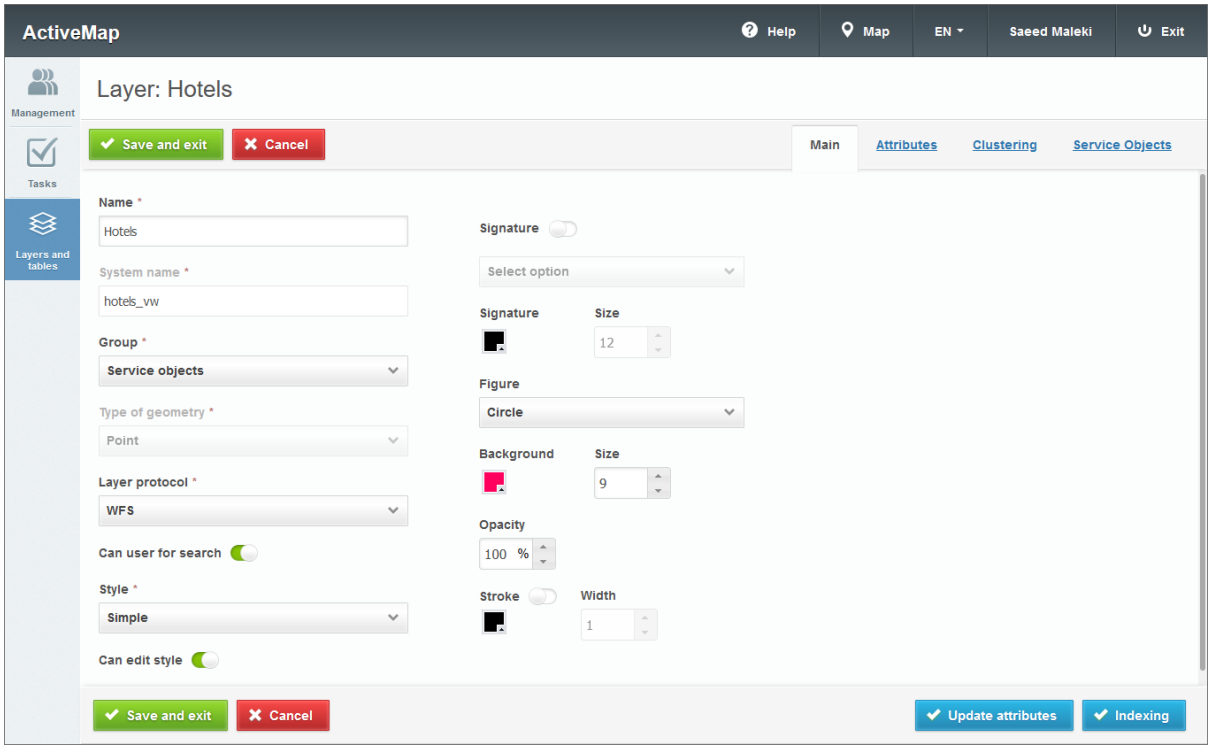


Fig. 2.103: Layer editing

To change information about layer attributes, switch to the “Attributes” tab in the layer editing window (Fig. 2.104).

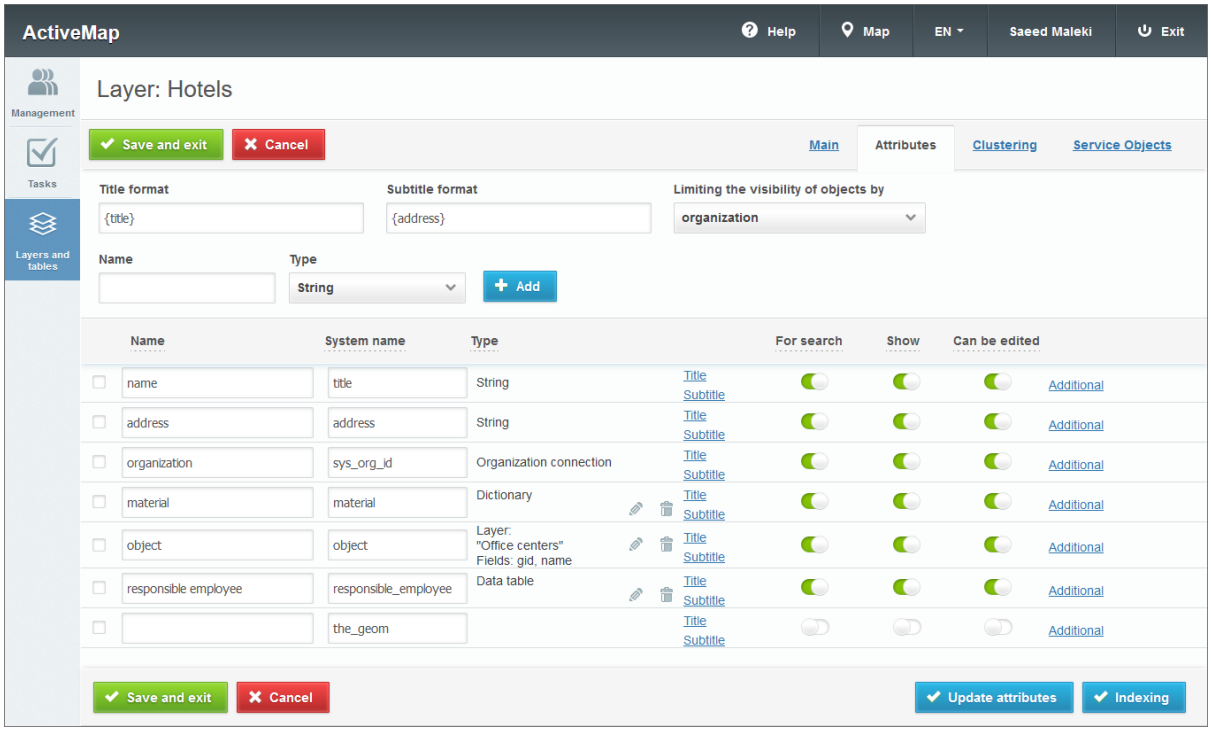


Fig. 2.104: Editing layer attributes

Here you can see the fields for adding and editing attributes. You can delete an

attribute by clicking on the right side of the line. You can also edit or delete the relationships between tables.

To edit the relationships between tables, you should:

1. Click the button in the link attribute line.
2. In the window that opens, set a new relationship for this attribute by selecting values from the drop-down lists (Fig. 2.105).

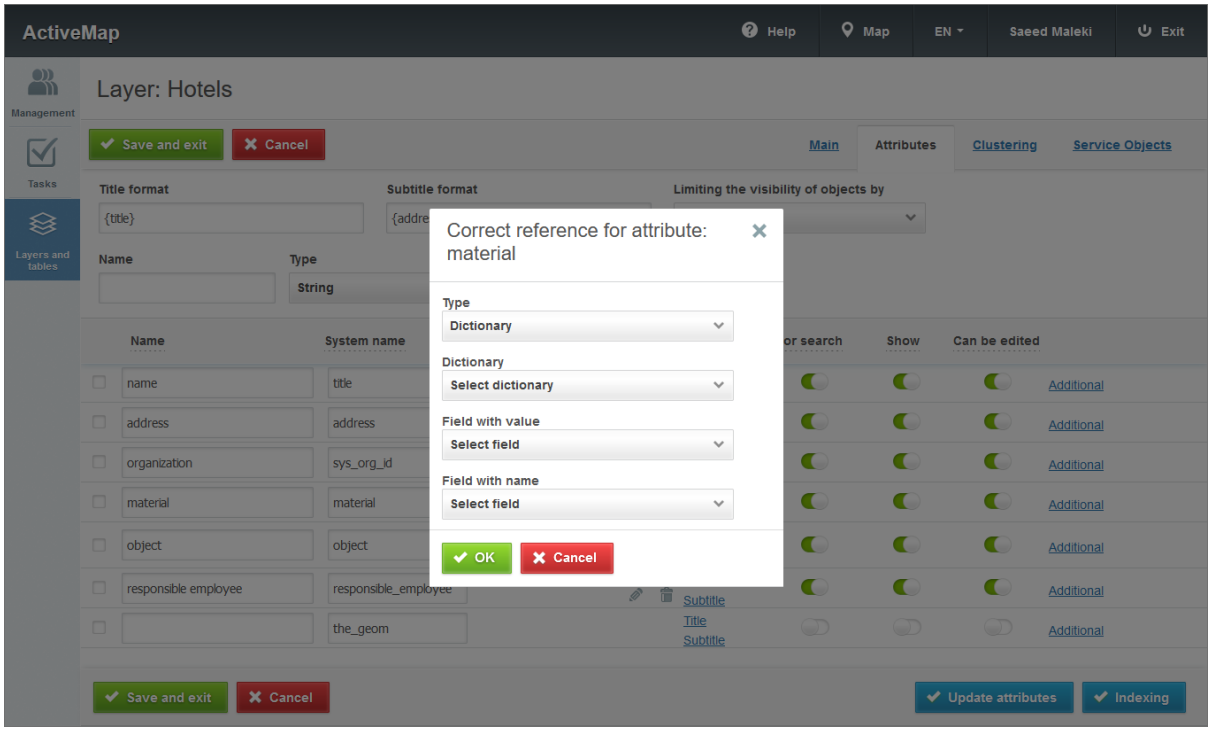


Fig. 2.105: Changing the relationship for an attribute

3. Save changes by clicking .

You can see the established relationship in the layer card. After selecting a new linked table, value field, or name field, this field will be automatically filled with new values.

To delete the attribute's relationship with a directory or table, click the button in the "Type" column of the link attribute line and confirm your actions in the opened window (Fig. 2.106).

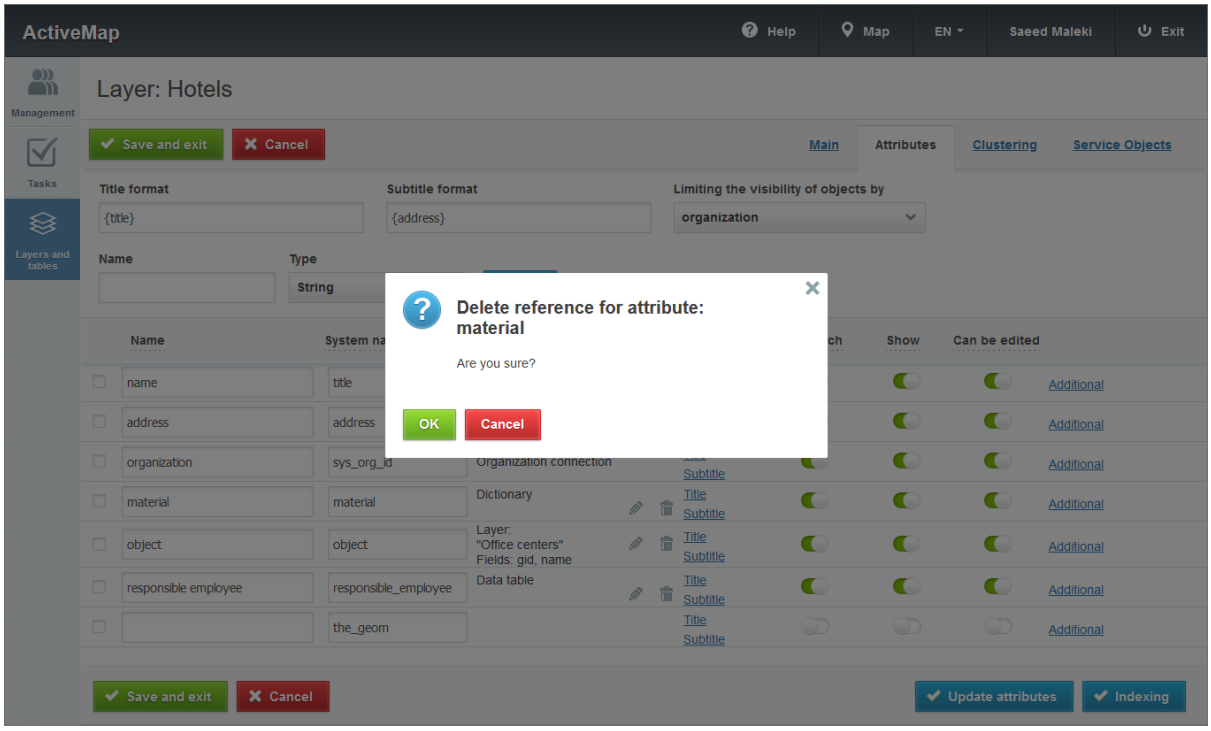
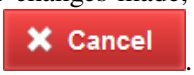


Fig. 2.106: Confirming the deletion of an attribute's relationship

In the editing window, the "Update attributes" and "Index" buttons become available. The button allows you to reset the cache when adding attributes to a layer and reload them from the database. Clicking generates a full update of the information about the selected layer. You can use this button if new information has been added and is temporarily absent in the search results.

To save the changes made, click . To cancel editing the layer, click  .

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 included in the cluster is calculated based on the scale.

When you switch to the "Clustering" tab in the editing window, a form opens. You can enable clustering, set the maximum zoom level, and create a new cluster (Fig. 2.107). Here there are graphs with the following headers: object count, icon, and label color.

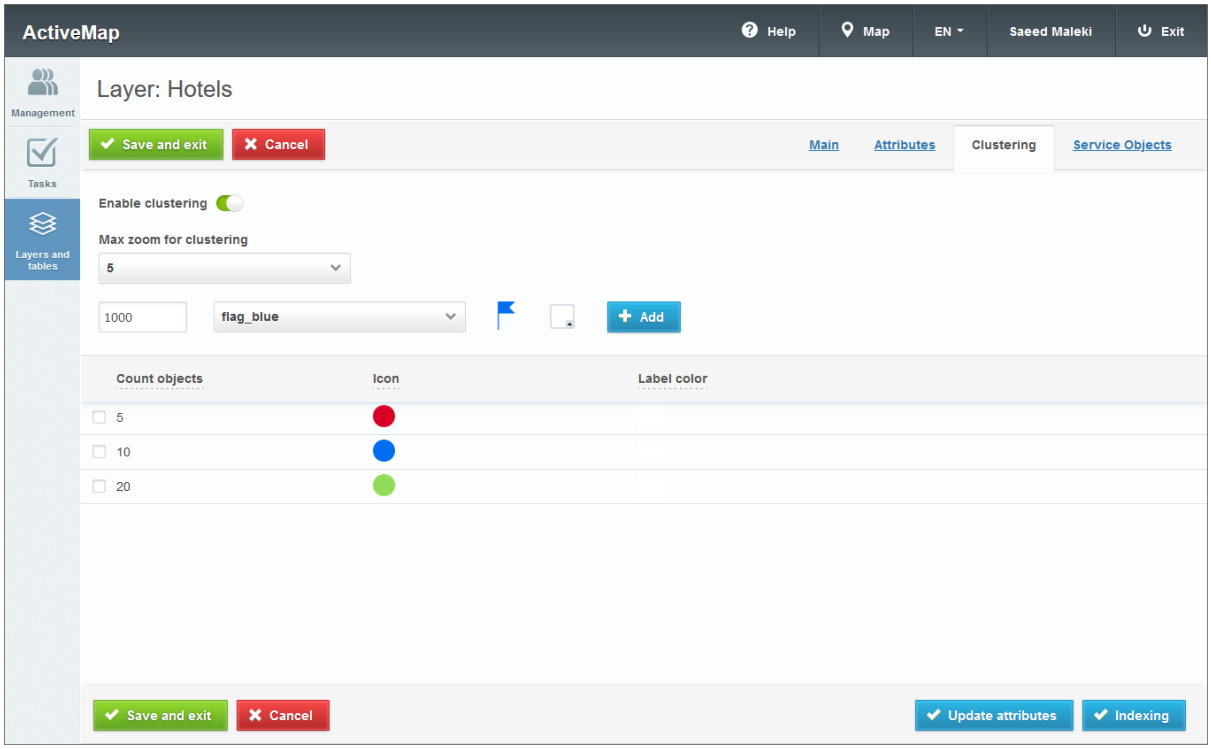


Fig. 2.107: Layer clustering settings

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

The “Object count” column shows the range of the number of objects that corresponds to a specific cluster. Number 5 next to the first cluster, 10 next to the second, and 15 next to the third (as shown in Fig. 2.107) 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 is 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 search

In the “Layers” tab, you 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 appears where you have 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 appear in the administration area.

To clear the filtering results, click “Clear all”.

Layer deletion

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

at the

bottom of the screen. The delete confirmation window appears with a choice of layer deletion modes: “Remove from geoportal”, “Remove from geoserver”, and “Remove from database” (Fig. 2.108). You can choose multiple options. To completely delete a layer, select all 3 items. Click OK to confirm the deletion. Click Cancel to cancel.

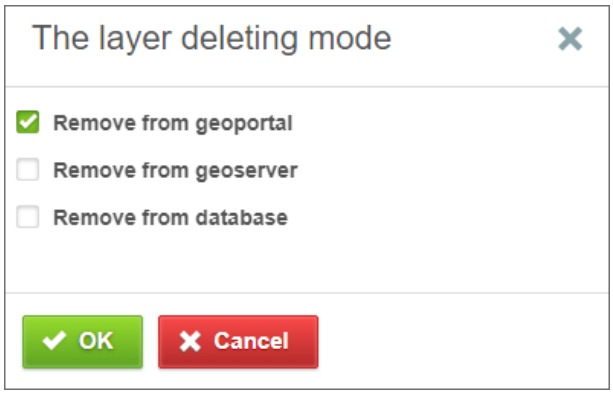


Fig. 2.108: Layer deletion confirmation

“Tables” tab

The “Tables” tab contains information about data tables and reference tables (dictionaries) of the system. Data tables and reference tables, unlike layers, do not contain spatial information about the location of objects such as geometry or coordinates of objects.

Reference tables and associated data tables are used to solve the following tasks:

- Simplification of filling attribute fields. With linked reference or data table, users can select the value of the attribute field from the suggested variants instead of entering it manually.
- Filtering layer objects on the map.
- Creation of thematic maps based on reference tables.
- Applying style according to the reference table.

When switching to the “Tables” tab, a table with the following columns becomes available (Fig. 2.109):

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

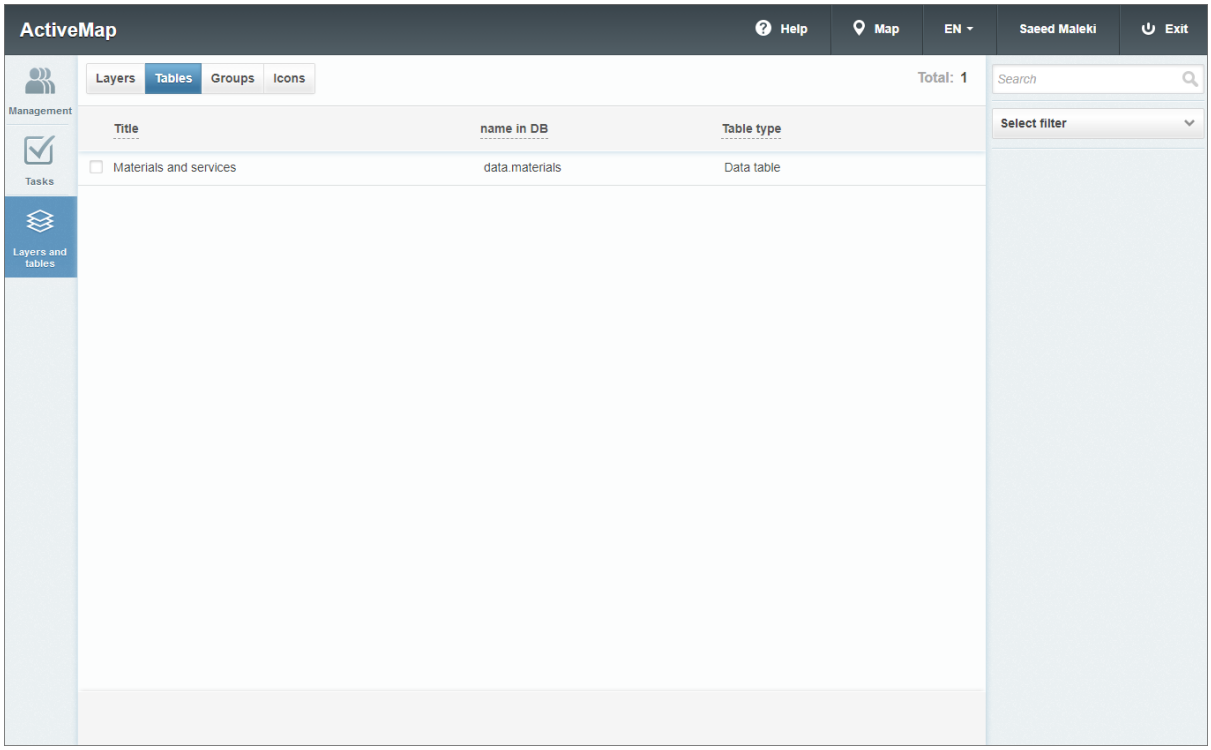
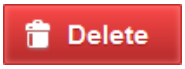


Fig. 2.109: “Tables” tab

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

To modify a table, click on the right side of the corresponding line. A window similar to the table creation window opens, where you can modify data, add new entries, and change the display order of attributes.

If you activate the “Service Objects” setting when editing a table, a full-text search of table data in ActiveMap Desktop will not be enabled automatically, as when creating a layer. In this case, you have to activate the search manually, if necessary.

To delete a single table, click on the right side of the corresponding row. To delete multiple tables simultaneously, select the checkboxes 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. 2.110):

- “Ordinal number” – place in the list of layer groups on the main page of ActiveMap Web, occupied by the group;
- “System group” – indication that a group contains system layers (by default, “User monitoring” is a system group);

- “Name” – name of the group;
- “Layers” – number of layers in the group.

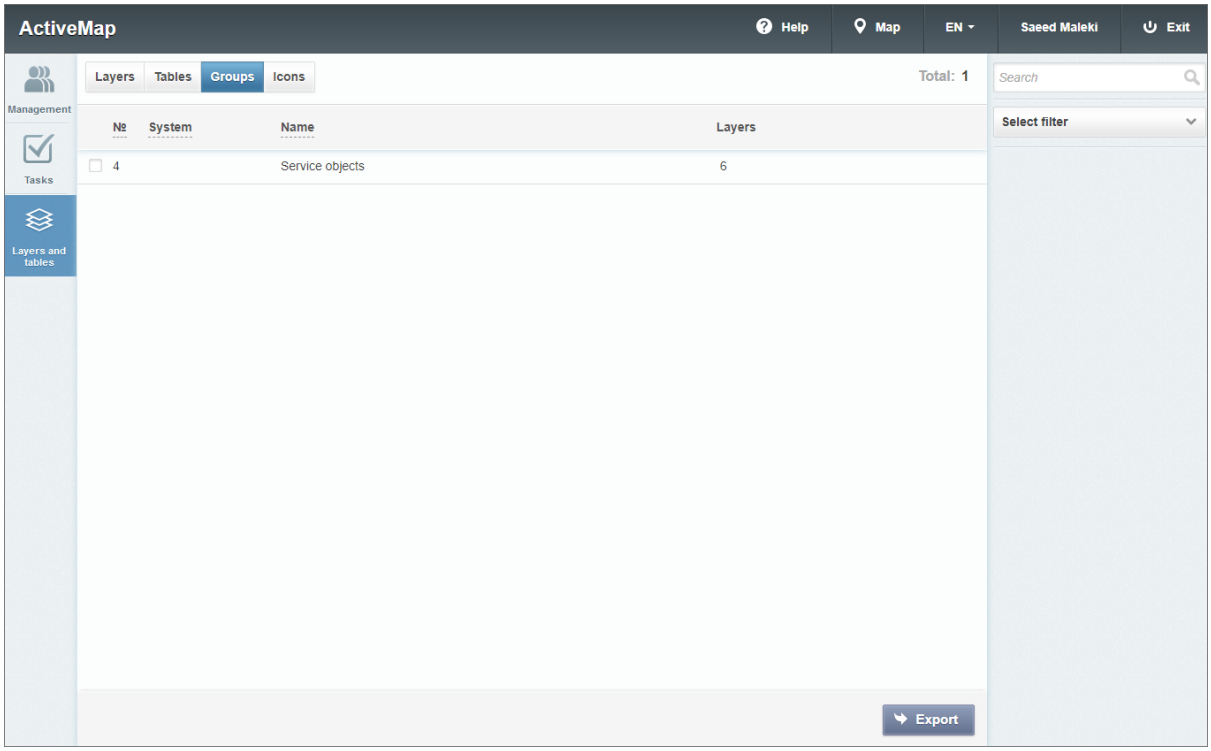


Fig. 2.110: “Groups” tab

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

“Icons” tab

The “Icons” tab displays a list of icon names and images (Fig. 2.111). You can use icons for style creating and for adding clustering to point layers.

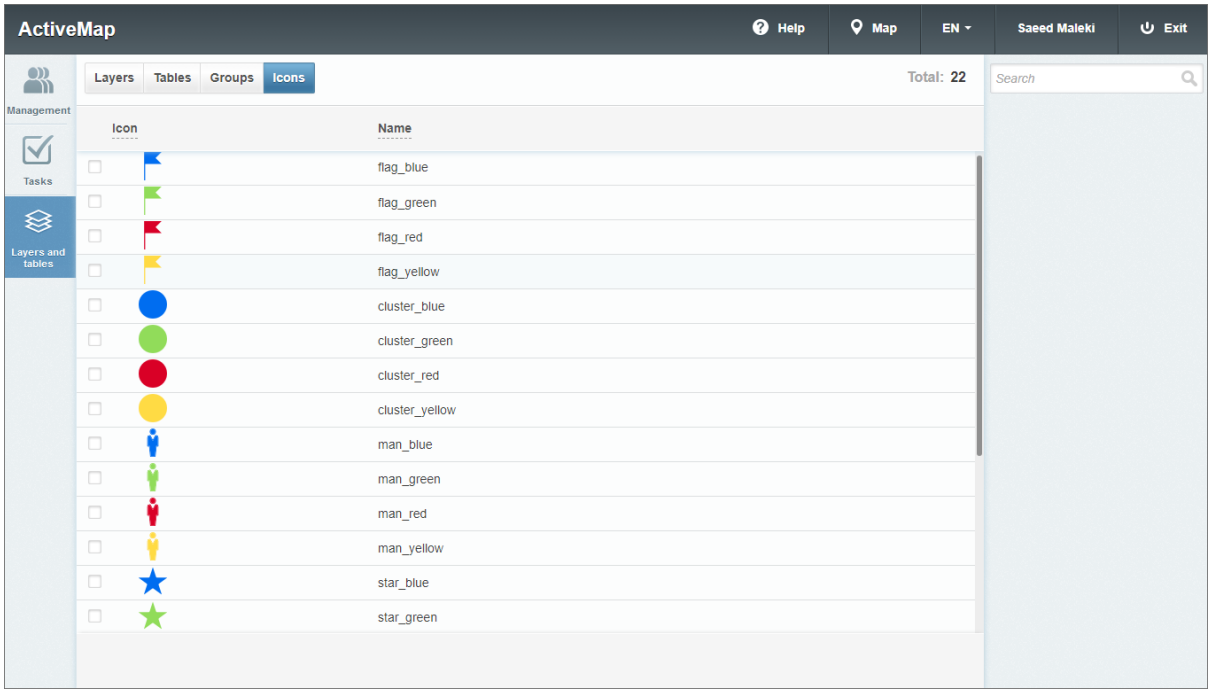


Fig. 2.111: “Icons” tab

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 “Exit” in the upper right corner of the page.

CHAPTER

THREE

FREQUENTLY ASKED QUESTIONS

3.1 Starting the Program

If you have problems with starting the Program, try to open the Program page in another browser or contact technical support via the hotline phone number indicated on the https://activemap.me/ website, or write an email to support@activemap.me.

3.2 Log in to the Program

If you are experiencing authorization problems, please contact technical support by calling the hotline number listed on the https://activemap.me/ website or by sending an email to support@activemap.me.

CHAPTER

FOUR

GLOSSARY

Account is a set of data about a user stored in the system, necessary for the authentication and providing access to personal data and settings.

Activation code is a file containing an encrypted hardware code, information about the number of users, and the license period.

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 the objects. Attribute data types are: integer, real, text, date, date and time, geometry.

Band is an object that is placed directly on the report page. It is a container for the other objects, such as “Text”, “Picture”, etc.

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. They use it for navigation through a map and for getting general information about the area of interest.

Bluetooth Low Energy (BLE) tags, also known as beacons, is a class of Bluetooth Low Energy (LE) devices that broadcast their identifier to nearby portable electronic devices. The identifier and several bytes sent with it can be used to determine the device’s physical location, track customers, or trigger a location-based action on the device.

Centroid is the center of a geographical object on a map. For most objects, the centroid coincides with the center of the rectangle described around the object.

Client organization is an association of users who make their requests via the mobile application, monitor their status, who 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 a user role in the System, responsible for administration of one or more specified clusters, namely: managing organizations and users, granting access rights to layers and reports, and managing tasks.

Cluster Inspector is a user role in the System, responsible for managing tasks of one or more specified clusters.

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

Composite field is a custom field format that contains one or more nested fields and supports the creation of multiple field instances in a task card. It is used to add several similar field sets to the task, with the number of sets being unknown in advance.

Contract is an entity for accounting and planning the task to be performed 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 the certain work items.

Data export is a data loading from the Program database to an external file.

Data table is a set of the related data stored in a structured format in a database.

DBF data format is a data storage format used as one of the standard ways of storing and transmitting information by database management systems, spreadsheets, etc.

Drag and Drop is a way to manipulate interface elements using a mouse or a touch screen. The method is implemented by "grabbing" (pressing and holding the left mouse button) the object displayed on the screen, which is available for such operation, and then moving it to another place (to change its location) or "dropping" it to another element (to call the corresponding action in the program).

Executor is a user role for creating new tasks and performing the assigned tasks in the System.

GDAL (Geospatial Data Abstraction Library) is a translator library for raster and vector geospatial data formats. As a library, it presents a single raster abstract data model and a single vector abstract data model to the calling application for all supported formats.

Geographic coordinates are the mathematical values that designate a position on the earth relative to a given reference system.

GeoJSON data format (Geographic JavaScript Object Notation) is a format for representing various geographic data structures. A GeoJSON object can be represented by a geometry, a feature, or a feature collection. GeoJSON supports the following geometry types: Point, LineString, Polygon, MultiPoint, MultiLineString, MultiPolygon and GeometryCollection. A feature in GeoJSON consists of geometry and additional properties. Feature collection consists of a set of features.

Geographic Information System (GIS) is an information system designed to collect, store, analyze, and display spatial data and related information about presented GIS objects.

GPS is a satellite navigation system that measures distance, time and determines the location in the WGS 84 world coordinate system. It can accurately determine the three-dimensional coordinates of an object equipped with a GPS receiver: latitude, longitude, height above sea level, as well as its speed, direction of movement, and current time.

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

Hardware code is a file that contains encrypted information about the server characteristics and the license key.

Hatching is a set of drawings and colors used to fill polygonal objects.

Image sticker (file label) is a text mark on the photo.

Information display panel is a panel designed to display specific information related to user actions, as well as messages that correct user actions (warning messages, tips).

Installer is a program that installs files on the end user's computer.

Interval is a data table that is used to configure the display styles of layer objects on the map depending on their specific numerical characteristics. The Program uses intervals of (a, b) type.

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.

Layer object visibility on the map is a displaying the layer object on the map as a certain symbol, line, or polygon.

Layer visibility on the map is a displaying of all layer objects on the map as a group of symbols, lines, or polygons.

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 and validity period, allowing to link the server software of the System to the equipment.

License key is a character string provided to the customer by the software vendor after purchasing the license, used to activate the product and obtain a digital license for a fixed server. Contains the maximum number of users and the license period in an encrypted form.

Linear object is an object on a digital map that represents a place or item that has length but no area at a given scale.

Managing map layers is the set of actions for managing layer visibility, creating and editing the geometry of layer objects on the map.

Map scale is the ratio of a distance on a map to the corresponding distance on the ground. A scale of 1:100,000 means that one unit on the map corresponds to 100,000 of the same units of measurement on the ground.

Mapping is a correspondence between a layer attribute and a task field.

MapInfo Interchange Format (MIF) is a MapInfo text data format that includes geographic data (objects) and a description of the data table containing attribute information related to objects.

Metadata is the information that describes the characteristics and properties of a particular layer.

Multi-object is a combination of several objects. Multi-objects can be of point, line, and polygon geometric types.

Multiservice is the ability to represent any layer as a layer with service objects.

Node is the point representing the beginning or ending of an edge of a linear or polygonal object, topologically linked to all the edges that meet there.

Object attributes (attribute data) are values describing the object properties. Attribute data types are: integer, real, text, date and time, geometry.

Object geometry is the measurements and properties of points, lines and surfaces. In GIS, geometry represents spatial components of geographic objects.

Object import is a data loading from external files into the Program database.

One-to-many relationship is a relation between two sets of data where one record in a parent table can be associated with one or more records in another table (child data table).

Operational tasks are the tasks created to solve current issues.

Organization Administrator is a user role in the System, responsible for administering the organization, namely: creating users, granting access rights to layers and reports within the organization, and managing tasks of the organization.

Organization Inspector is a user role in the System, responsible for managing tasks within the organization.

Photo sample is a reference photo used as the basis for assessing similarity with a photo uploaded by the user to confirm the completion of work on the service object.

Photo response is a photo uploaded by the executor to the task as a response to the attached photo sample to confirm the completed work on the service object.

Point object is a cartographic object that does not have length or area in the accepted scale.

Polygonal (area) object is a cartographic object that bounds the area at a given scale.

Program user (User) is a person (employee) or organization that uses the current Program to perform a specific function.

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 (dictionary) is a table with systematically organized data intended to help users to handle attribute information on objects.

Service objects are the layers containing the objects of interest of the user organization due to their relation to business activity of the involved organization. Service objects are used to set up tasks. They contain the necessary information for the task execution.

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

SHP data format is a vector format of geographic files. It allows users to store the following types of geometric objects: points (polypoints), lines (polylines), polygons, and other objects. A file can contain only one object type. Each entry in the SHP file can have multiple attributes to describe its geometry.

Scheduled tasks are the tasks created at a specified date and time according to a template.

Spatial database is a database optimized to store and access spatial data or data that defines a geometric space.

SQLite is an in-process library that implements a self-contained, serverless, zero-configuration, transactional SQL database engine.

SQLite Data Format is the SQLite relational database file format.

Sub-object is an object included in the multi-object.

Symbol is a graphical representation of a geographic object or a class of spatial objects, which helps to identify and distinguish them from other spatial objects on the map.

System Administrator is a user role in the System with the maximum rights, responsible for its configuration, including managing clusters, organizations, users of all roles, contracts, directories, as well as for distributing access rights to layers and reports.

System Inspector is a user role in the System, responsible for managing tasks across all clusters.

System reference table is a reference table generated automatically based on data entered into the system. System reference tables include tables of system users, priorities and types of work.

TAB data format is the format of MapInfo vector spatial data files (MapInfo files).

Task is a system entity containing information about the type of work, creation date, deadline, priority, execution step, contract, service object, as well as instructions for execution. It is possible to attach photo samples, photo responses, and other auxiliary files (documents, photos, and videos) to the task.

Task priority is a characteristic of the urgency of the task.

Task status is a characteristic of the completion degree of work on the task, determined by the dispatcher or administrator when accepting the task.

Task step is a stage in the sequence of actions for completing a task changed by the task executor, dispatcher, or automatically by the system according to the set algorithm.

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

Tile (map tile) is one of many images that a map is divided into. Most map services use square tiles of 256x256 pixels.

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

Tile Map Service (TMS) is a specification for storing and retrieving cartographic data that provides access to the map tiles rendered at a specific scale level. These resources are accessed via the "REST" interface.

Toolbar is a graphical user interface with buttons for performing Program commands.

Tiled Web Map Service (TWMS) is a specification for storing and retrieving map data that provides pre-built georeferenced map images. TWMS relies on technologies for building and transmitting large images to the Internet using tiles – small, standard-sized image fragments. A TWMS service may also include one or more styles, dimensions, or tiling schemes to define how the TWMS layer is displayed. Accessing data via the TWMS protocol requires preprocessing of the source cartographic data by creating tiles for the full range of scales, over the entire area. This technology allows locally caching an image by building a tile grid.

User profile is a characteristic of an individual system user, represented by a set of attributes, such as full name, email, phone number, etc.

User rights management is a set of actions for registering and managing user rights in the Program.

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.

Webhook is an automated launching of http requests in response to operations on entities (comments and tasks).

Web Feature Service (WFS) is a web service for querying spatial data that includes a standardized API. Unlike the Web Map Service (WMS), which returns a map image (rendered data), the WFS service returns actual objects with geometry and attributes that can be used in any type of geospatial analysis. WFS services also support filters that allow users to perform spatial and attribute queries on the data.

Web Map Service (WMS) is a standard protocol for serving geographically referenced images over the Internet, generated by a cartographic server based on data from the GIS database. The WMS service may also include a Styled Layer Descriptor (SLD) to define how the WMS layer should be displayed.

The WMS service layer consists of three elements arranged hierarchically in the table of contents. At the top is the name of the WMS service, which contains all the layers of the WMS map. The next level down contains the WMS composite layers whose only function is to organize the WMS sublayers into appropriate groups. There is at least one WMS composite layer, but there can be any number of composite WMS layers (and even nested groups within groups). WMS composite layers do not contain map layers. This is the third group, WMS sublayers that actually contain map layers.

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