

Editing

IN THIS CHAPTER:

- Group Editor
- Topology Editor
- Vector Eraser tool
- Shears tool
- Camber Editor
- Adhesion Corrector
- Shift / Resize Polyline tool
- Bookmarks - positioning tool
- Inspector tool

Group Editor

As appears from the name, this tool operates on groups of objects, but it changes their properties rather than shape. Object transfer to another layer, duplication, change of attributes and Z-values, selection and marking of objects constitute its field of application.

For example, it provides the fastest method to assign attributive data to one-type vector objects.

Editing starts with selection of objects. It may be done in several ways:

- Manual selection - it is enough to click an object with the mouse left button to include it into the group. If you click a selected object again it will be excluded.
- Box selection - hold the left mouse button down, drag a box to select all the objects within it, and release the button. If you drag the box from left to right, only objects totally falling into its area will be selected; if you drag it from right to left, the objects crossed by its boundary will be also selected for editing. Several box selections may be done successively to enlarge the group and specifying of individual objects helps to correct its membership.
- Selection by a query - this option enables you to select all the objects meeting the requirements you have specified. These may be layer, object type, and additional conditions formed in the specialized field of the dialog box. You may mark the objects of the group for further successive review instead of their selection for editing.
- To deselect a group, use the *Deselect* command of the Group Editor submenu or “take” any other tool.

Apart from the layer and elevation (Z-value), change of selected objects' features is possible if the objects are of the same type.

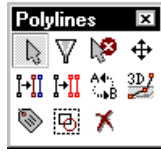
For group editing of attributive data, all the selected objects should be connected with the same table of attributes, i.e. they should be of the same type and belong to the same layer.

Group Editor's submenu contains commands that can be applied to the selected objects. .

Hot key for selection of *Group Editor* is **Alt + «~»**.

Commands of Group Editor submenu

Additional menu of
Group Editor



- Select objects
- Select objects by a query
- Unselect
- Move
- Duplicate to another layer(s)
- Copy to the same layer
- Reverse sequence order of vertices in polyline(s)
- Convert to 3D polyline(s)
- Edit attributes of selected objects
- Create a block out of a selected objects
- Delete selected objects

Group Editor submenu is an icon bar you can open by a right click within the program working window. The set of commands available from the submenu depends on the type of selected objects:

Select objects

This mode enables you to change the group of selected objects - to include new or exclude some previously selected ones with the mouse left button or applying box selection.

Select objects by a query

Opens the *Select Objects by a Query* dialog box. Here you may specify the layer (layers) to select objects from, the type (types) of objects to be selected, and some specific selection criteria. It is possible to select or mark objects that meet selection requirements. The dialog box is discussed in detail below.

Unselect

The command deselects all the selected objects

Move

All selected objects are enframed by a box and may be moved with the mouse or arrow keys. To move objects with the mouse, hold down the left button inside the box and drag the group.

You may also move objects stepwise applying the keyboard - one stroke of an arrow key shifts the box per one screen pixel, so you may control exactness of the process with the help of zooming. To leave the mode, click the mouse right button, or stroke the *Esc* key.

Duplicate to another layer

The command opens the *Select Layer for Duplicating* dialog box where you specify the layer you want to duplicate (copy) the selected objects to. Duplication results will be invisible if layers of copies are under layers of originals. You may also copy objects to their own layer.

The command is useful when you create a vector layer - «mask», which will be used by the *Rasterize vector data* utility. It helps to «unload» data-saturated images.

Copy to the same layer

The command allows you to substitute vectorizing of identical objects by positioning of copies. New objects are shifted a little relatively the initial one, selected, and *Move* mode is started automatically.

Input/edit object attributes

The command is accessible if all selected vector objects are of the same type and ascribed to the same layer linked to the Database of your project.

It opens the *Object Attributes* dialog box. There may be written “Multiple selection” in some fields. It means that some selected objects have different attributive values in these fields. If you specify a new value there it will be assigned to all the members of the group..

You may change attributes in explicitly editable fields only. Input of a new value in one field does not affect other fields including ones with “Multiple selection”.

Create block

Block in Easy Trace is the main representation means for symbol objects. It may be used for example for check of attributes in *Thematic view* mode.

Another field of block application is vectorizing of identical complex objects. You may vectorize one of them, convert it into a block and then input the block in all desirable positions. The blocks may be later *exploded into composing entities*.

To create a new block, select two or more objects, including one (only!) point. The point serves as the insertion point of the block; it is represented in the block by one screen pixel.

The command opens the *Parameters for Block Definition* dialog box where you may specify block name and the layer it will be assigned to by default.

Delete selected objects

The command deletes all objects currently selected with *Group Editor*.



Reverse sequence order of vertices in polyline(s)

The command changes direction (sequence order of vertices) of all selected polylines. It may be necessary to show direction of river current or represent lines of a complex form (fences, ravines, etc.) correctly.

Direction of a simple polyline may be controlled with the help of *Line direction* mode.



Convert to 3D polyline(s)

The command turns all selected polylines into 3D-polylines. Z-coordinates of the lines become elevation values for points in the corresponding 3D-polylines. The command is accessible for polylines only.



Convert to polyline(s)


The command turns all selected 3D-polylines into common polylines. Z-coordinate of the polylines will be equal to zero. The command is accessible for 3D-polylines only.

Parameter bar of Group Editor

Parameter bar of Group Editor

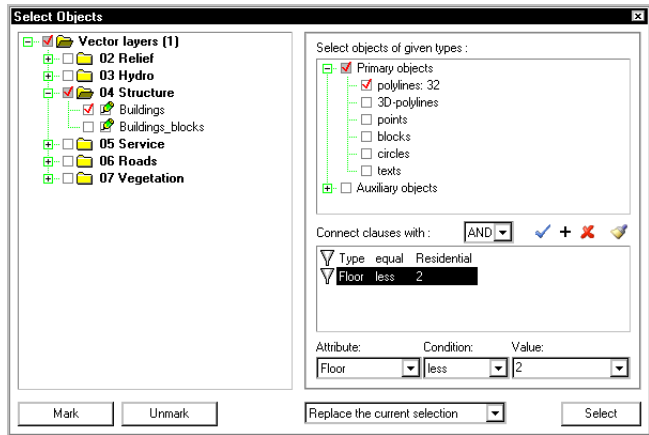


The set of fields in *Parameter bar of Group Editor* depends on the set of selected objects. If all selected objects are of the same type, the bar is identical to one of *Editor of vector entities*. For a nonuniform group, only the number of selected objects is shown.

If all selected objects are blocks, the bar contains a special button  (*Explode blocks*). It divides selected blocks into original vector objects.

Select Objects dialog box at selection by a query

Select Objects dialog box of Group Editor at selection by a query



Object selection with the help of a query is probably the most flexible and effective way to form a group of objects for further check and editing. It helps to accomplish such non-trivial tasks as object classifying after automatic vectorizing, search of objects with wrong attributes, and group editing of attributive data.

Besides, it provides convenient means of object marking for subsequent check and correction. Marked objects become accessible for quick review with prompt jumps from one object to another.

For quick navigation between marked objects, switch on the *View Marked Objects* mode. Use «F» and «V» keys to move from one object to another with simultaneous mark deletion.

Selection by a query is based on a combination of object features such as layer, type, geometrical and attributive characteristics. You may form arbitrary sets of selection criteria.

Use of selection by a query

Click *Select* button after criteria specifying to complete the operation. Several options are provided for object selection:

- *Replace the current selection;*
- *Add to the current selection;*
- *Search among selected objects.*

Selected objects may be marked for further review or unmarked with the help of *Mark* and *Unmark* buttons.

Opened dialog box of selection by a query does not prevent use of other commands from

Group Editor submenu and *Parameter* bar.

Selection conducting

Specify the set of layers to search for objects at first of all - just tick their names.

Then specify the type of vector objects to be selected or marked in the *Select objects of given type* field. Number of objects meeting these two selection criteria will be shown immediately for every object type. It does not depend on the number of objects already selected with *Group Editor*.

The next step is detailing of selection criteria. Use the *Attribute*, *Condition* and *Value* fields to form a set of requirements, which selected objects should meet. There may be several conditions connected by logical operators *AND* or *OR*.

Specified selection conditions form a filter represented in a frame. If the frame is empty, selection will be based on object type(s) and layer(s) only.

Change or adding of selection conditions immediately affects the number of objects that meet the requirements.

Forming of the set of selection criteria

The *Attribute / Condition / Value* group enables you to form and edit selection criteria. Specified conditions become active when you add them to the filter. To form a set of selection conditions, act as following:

1. Select an attribute to base selection upon. This may be an object characteristic (length, number of vertices, closure), or a field of an attributive table.
Only attributes applicable to all objects are represented in the list if the group comprises objects of different types or different layers.
2. Select fitness condition for attribute values (greater, less, equal, etc.). The set of available conditions depends on the type of attribute.
3. Select or input the value to compare attribute values with. It may be a number or a text string.
4. Add the formed set of conditions to the filter.
5. There may be more than one condition of object fitness for selection. If all of them should be met simultaneously, select «*AND*» option in the *Connect clauses with* field. If conformity with any of the conditions is sufficient for selection, choose «*OR*».


The following commands are provided for filter forming and editing:



Add - adds current values in the *Attribute / Condition / Value* fields to the filter.



Delete - deletes the chosen condition from the filter. To choose a condition, just click it.

 **Modify** - changes condition or value in the filter for one in the corresponding field.

 **Select-by-sample** - forms selection criteria from attributes of the object you have specified in the screen.

Object attributes and their values

Selection conditions may comprise attributes of two types - built-in and custom ones. Built-in attributes are mainly geometrical characteristics of objects. Their names begin with symbol «\$». Custom attributes are names of fields in attributive tables linked with layers of vector objects.

Built-in object attributes

Polylines (Polygons)

<i>\$VrtCnt</i>	<i>number of vertices in polyline</i>	<i>number</i>
<i>\$Length</i>	<i>polyline length</i>	<i>number (project units)</i>
<i>\$Area</i>	<i>polygon (closed polyline) area</i>	<i>number (project units)</i>
<i>\$Winding</i>	<i>line winding in percents</i>	<i>number</i>
<i>\$Z</i>	<i>elevation value</i>	<i>number</i>
<i>\$Closed</i>	<i>polyline closure</i>	<i>yes/no</i>

Points

<i>\$PointSize</i>	<i>point size</i>	<i>number (mm on the paper)</i>
<i>\$BlockName</i>	<i>name of the built-in point type</i>	<i>set of point types</i>
<i>\$Z</i>	<i>elevation value</i>	<i>number</i>

Blocks

<i>\$BlockName</i>	<i>block name</i>	<i>set of blocks in the project</i>
<i>\$Angle</i>	<i>rotation angle of the block</i>	<i>number (degrees)</i>

Circles

<i>\$Radius</i>	<i>circle radius</i>	<i>number (project units)</i>
-----------------	----------------------	-------------------------------

Text

<i>\$Height</i>	<i>text height</i>	<i>number (mm on the paper)</i>
<i>\$Align</i>	<i>type of text align</i>	<i>set of values</i>
<i>\$Style</i>	<i>name of text style</i>	<i>set of styles in the project</i>
<i>\$Angle</i>	<i>rotation angle of a text string</i>	<i>number (degrees)</i>
<i>\$String</i>	<i>text string</i>	<i>symbol string</i>

Custom attributes

Types and names of custom attributes depend on types and names of fields in attributive tables connected with different vector layers.

As a rule, they are in use for selection of one-type objects belonging to the same layer. Nevertheless, you may select objects having an attribute of name and type common for several layers.

If a domain of possible values is specified for the attribute chosen for object selection, the *Value* field contains the list of possible values.

Moreover, if possible values in the attribute domain are correlated with text pseudonyms, just these pseudonyms will be represented in the list.

Conditions of attribute-based selection

Logical operations that form a selection condition depend on the attribute type.

The *Condition* field contains a list of logical operations applicable to the selected attribute. The following operations are provided:

- equal / not equal;
- less / not less;
- greater / not greater;
- multiple;
- empty / not empty;
- like / not like;

The «multiple» condition is accessible for numerical values only, and the «like» condition - for text strings.

Comparison operations («less» - «greater») are inaccessible for domain-restricted attributes. Instead, the «*Another*» operation is provided for selection of objects with «incorrect» attribute values that do not belong to the domain. Such objects may appear at data import as well as copying or transfer of objects to another layer.

All the operations except «empty» and «another» require filling of the *Value* field.

Topology Editor

This tool is designed for forming of topological links between objects as well as correction of their vertices or insertion points. Within the capture distance of the cursor, it works on all objects of visible layers at once. If vertices of several polylines and/or insertion points of several objects of several objects coincide, *Topology Editor* operates with them as with a single point.

The program automatically starts the «*Show polyline vertices*» view mode when you select the tool.

When an insertion point, an edge, or a polyline vertex gets into the snap distance of the tool, a pop-up prompting appears that contains information about the number of objects sharing this edge or vertex.

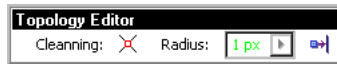
If the «*Auto-snap*» mode is on, a special marker substitutes the cursor at object snapping for univocal pointing at the captured vertex, insertion point or position in the edge.


Objects captured with *Group Editor* become highlighted in turn in a way common with other Editors.


Group Editor affects only objects belonging to visible (switched on) vector layers.

Parameter bar of Topology Editor

Parameter bar of Topology Editor



 **Cleaning mode** - pulls vertices to the specified location. At that, all vertices within the *Cleaning radius* will be substituted for one vertex and insertion points of objects will be moved to the specified position.

 **Auto-snap** - makes snap distance of the cursor about three times greater and shows snap points. The tool may snap insertion points, vertices, and the nearest (to the cursor) points in polyline edges. At snapping, the cursor changes its appearance.

Editing methods

Move of vertices and insertion points

Click the vertex (insertion point) to snap it and then click its desirable position. Right click or *Esc* key allows you to refuse from move of the captured vertex.

If the vertex (an insertion point) is common for several objects, its move affects all relevant polylines and/or objects

Adding of vertices

Point at a polyline edge with the cursor. A new vertex will be added in the nearest position. If the pointed segment is common for several polylines, new vertices will be added to all of them.

You may create a new vertex or a node by move of a polyline vertex or an object insertion point on an edge or vertex of another polyline, i.e. at object snapping.

Snapping method (forming of a node or a common vertex) depends on the rules specified in the *Project -> Properties -> Topology* dialog box.

Vertex deletion

To delete a vertex (common vertex), click it with the mouse right button.

Topology cleaning mode

Click the button in the *Parameter* bar to switch on the *Topology cleaning* mode, and then click the point where to you want to move vertices of polylines and/or insertion points of vector objects. All vertices within *cleaning radius* will be substituted for a vertex at the specified point. Similarly, insertion points will be moved.

Object deletion

Any operation on objects makes one of them selected (current). It may be deleted by a stroke of *Tab* or *Del*, without selection of another tool. Error and correction marks are special objects that may be deleted with the mouse right button.

Additional features

Hold *Shift* or *Ctrl* pressed to change the way of snapping. The program will ignore specified topological rules and form only common vertices or nodes correspondingly.

To transform a common vertex into a node, click it at pressed *Ctrl* key.

Hot key for selection of *Topology Editor* is «1» for normal mode and «2» for *Topology cleaning* mode.

Vector eraser

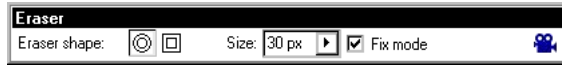
This is the main tool designed for correction of «dense» lines generated by *Autotrace Lines* utility. Ordinary editing tools are ineffective for such lines. Their correction comes to four main operations:



- **Deletion of large juts** - small spikes may be ignored as they will be deleted with *Line Form Optimization* utility.
- **End trimming** - deletion of «hooks» and bends at polyline ends greatly improves effectiveness of line joining across gaps with *Breakup Joining* utility and pulling of line ends to the frame with *Topology Correction* utility.
- **Deletion of false joinings** - it is often enough to erase a false joining for subsequent automatic sewing of line segments together.
- **Deletion of rubbish** - do not try to delete all vector artefacts manually, no matter how easy the operation is. *Raw Line Filtering* utility does it much quicker.

Superfluity of vertices in «dense» lines enables you to correct them with not so great care and therefore quickly. Line form will be improved later.

Parameter bar of Vector Eraser

Parameter bar of
Vector Eraser tool



  **Eraser shape** - You may delete vertices and cut lines with a round or a rectangular marker. Corners of the latter enables you to make precise cuts in lines.

Size - you may select any marker size in the range from 5 to 100 screen pixels, depending on the size and resolution of your screen and the scale of screen output comfortable for editing. As a rule, it is equal to 50-70 pixels. Smaller marker decreases effectiveness of editing. Use the mouse wheel to zoom in the project at sites where exact correction is necessary.

Fix mode - when on, a single stroke of *Shift* or *Ctrl* makes a certain operation mode current. When off, the mode is active until you hold a corresponding key pressed.

Repeated stroke of the key returns the tool to the main (vertex deletion) mode.

 **Video-demonstration** - starts a video showing use of the tool.

Editing modes

Vector Eraser can function in three modes indicated by the color of its cursor. Use *Shift* and *Ctrl* for mode selection:

- **White** - erases (deletes) vertices. Left click deletes all vertices getting inside the marker of the cursor. To delete several vertices in a row, keep the left button of the mouse pressed and pass the tool cursor over them. If you delete all vertices of a polyline in this mode, the line itself will be deleted;
- **Blue** - deletes vertices with line cutting. Hold *Ctrl* pressed and click the line you want to dissect. Line part within the marker of the cursor will be deleted;
- **Red** - one-touch deletion of objects. Keep *Shift* pressed and delete objects with the left button.

You may cancel deletion (dissection) with the right button of the mouse that works similar to the *Undo* command.

You may select the tool from the *Edit* menu or from *Special* toolbar. Hot key for selection is «Q».

Polygonal Shears

Boundaries of one or several polygons form the «cutting rim» of this tool. It correctly splits consistent linear - polygonal coverages. Objects in the cut off part may be selected or deleted automatically.

The tool cuts off and deletes any vector data either within or outside user-specified polygons. For example, it may be used to delete ends of river lines that got inside polygons of lakes or to cut off everything outside the map sheet frame in a multi-sheet project.

Cutting borders may be selected from existing polygonal objects or specified manually. To specify cutting borders, just input their vertices.

To select already existing polygons, hold *Shift* pressed and click any point within the polygon(s) with the arrow marker, which substitutes the cursor.

Polygons may be also selected beforehand with *Group Editor*. They automatically become cutting borders when you «take» *Shears*.

Manual selection of several polygons with *Shears* is similar to selection with *Group Editor* - the first pointing includes a polygon into the group, and the second excludes it.

When selected, adjacent polygons form a united cutting border. Objects will be dissected by their combined outer boundary.

The tool does not affect the polygons selected to form cutting borders.

Cutting borders may be edited by means of vertex adding, move, and deletion similar to editing of polylines.

You may specify a set of vector layers to be affected by the tool, otherwise *Shears* will cut objects belonging to all visible non-frozen vector layers.

You may select the tool from the *Edit* menu or from *Special* toolbar. Hot key for selection is *Alt-W*.


Commands of Shears tool submenu


Submenu
of Polygonal Shears





- invert cutting borders
- delete the current border
- delete all cutting borders
- split and select
- split and delete


Contextual menu of the tool is an icon bar you can open by a right click within the program working window. It consists of the following commands:

 **Invert cutting borders** - inverts the areas you have specified - polylines outside these areas will be selected/deleted after inversion

 **Delete the current border** - deletes only the current (highlighted) cutting border. To make a polygon current, point it with the cursor.

 **Delete all borders** - deselects all currently specified cutting borders.

 **Split and select** - the command splits polylines at the points of their intersection with the specified polygons and automatically starts the group editing mode. At that, polyline segments inside the specified areas becomes selected.

 **Split and delete** - splits polylines just like the previous command does but deletes polyline segments inside the specified areas.

Parameter bar of Polygonal Shares

Parameter bar
of Polygonal Shear tool



Selected layers - here you may form a list of layers that will be affected by the tool. If nothing is specified in this field, the tool cuts objects belonging to visible non-frozen layers.

Camber Editor

Camber Editor is one of most universal and constantly in use tools for line shape editing. It enables correction of any smooth curve just by several moves. The camber it forms is smoothly connected with neighboring line segments.

The tool can modify common parts of different polylines in coordination (e.g., common boundaries of adjacent polygons).

Description of the tool

Line form editing starts with selection of the object (in the auto-selection mode usually). Click the mouse left button near the line where you want to form a camber (do not touch the line) and begin to move the cursor towards the line.

Color of the captured line changes and three markers appear in the line. The central marker corresponds to the peak of future camber and two others indicate ends of the

line part being bent.

The farther is the cursor from the line when you start the operation the bigger is the camber radius and therefore the larger line segment will be modified.

Horizontal deviation of «pressure» vector enables you to form a asymmetrical S-shape camber. The longer is the vector, the larger is the camber.

You may change the direction of cursor moving to «pull» the line part rather than «push» it and thus to form a concavity.

Camber radius on the captured line may be changed with the mouse wheel.

Left click fixes the current camber. Right click or *Undo* command allow you to refuse from line alteration.

Attention! Remember that Undo command by right click is not restricted by modifications made with Camber Editor and may cancel previous operations

It is recommended to switch off the auto-selection mode at editing of closely located lines. In that case you must click the line itself to make it current.


Switch on the *Cohesion keeping deformation* mode at editing of coincident parts of different lines. The number of such lines is unlimited.

Parameter bar of Camber Editor


Parameter bar
of Camber Editor tool



Selected layers - the tool interacts with polylines of all visible non-frozen layers by default but you may specify a list of layers that contain objects subject to editing to avoid accidental capture of irrelevant lines.

 **Auto-selection** - activates object capture by «pressure» of the tool marker. The next objects becomes available for selection after you have completed editing of the previous one. Then you just move the cursor to the new start position, click the mouse left button, and start «to press» on the object.

Approximation precision - controls precision of smooth camber transformation into polyline vertices similar to the case of tracing tools and *Line Form Optimization* utility.

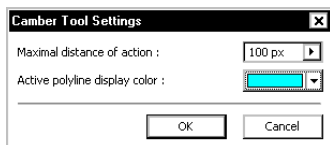
 **Single-object deformation** - only one polyline may be edited at once in this mode. Other lines coinciding with the line part being deformed will be ignored.

 **Cohesion keeping deformation** - common segments of the captured and other lines will be modified together.

 **Parameters** - opens the *Camber Tool Settings* dialog box.

Parameters of Camber Editor

Camber Editor Settings
dialog box



Maximal distance of action - limits the tool's radius of action and thus prevents accidental alterations of captured objects beyond the working window.

Active polyline display color - allows color selection for representation of the current line.

Adhesion corrector

Automatic vectorizing always generates a lot of artefacts. These are «adhesions» of neighboring lines, «bridges», «branches», etc. A great share of such objects can be deleted with *Raw Line Filtering* utility, and the remains usually require manual editing.

Actually, *Corrector* and the utility fulfill the same operations but the tool allows you to select the way of artefact processing.

Deletion of «branches», «strokes», or «loops» takes just artefact pointing. To delete an «X-joint», hold *Shift* down otherwise it will be regarded as a «bridge» or an «adhesion».

Processing of «bridges» and «adhesions» is interactive.

The program suggests the way of correction at artefact selection. To change it, move the cursor along the artefact (adhesion) or crosswise it (bridge).

Mouse wheel rotation changes the distance between closing line segments at deletion of an «adhesion» or improves line bends adjacent to a «bridge». Left click to complete artefact processing.

Stroke *Esc* to interrupt the operation or click the mouse right button to cancel previous corrections. Similar to *Vector Eraser* and *Camber Editor*, right click is an exact equivalent of *Undo* command.

Parameter bar of Adhesion Corrector

Parameter bar
of *Adhesion Corrector* tool



Line width - width of raster lines in the source image. This parameters helps to calculate the length of undamaged line parts adjacent to the artefact. Big values correspond to long defect segments.

Displaying color - allows color selection for representation of supposed correction.

You may select the tool from the *Edit* menu or from *Special* toolbar. Hot key for selection is *Alt-X*.

Polyline Resizing / Shifting

Vector contours not always correspond to raster ones in the source map or space photo. For example, small closed contours drawn with rather heavy lines tend to «collapse» and become even smaller at vectorizing.

Correction of such contours requires their proportional stepwise expansion (or contraction sometimes).

Shift of polylines is another way of the tool application, at vectorizing of «double» lines as a rule. For example, if a road is represented by two lines in the map, you may vectorize one wayside, and then move it the central position.

The step of expansion / shift measured in pixels may be specified in the corresponding field of the Parameter bar.

Object move direction depends on right (expansion) or left (contraction) click. An unclosed polyline moves to the left (considering line direction) at left click and to the right at right click.

Several objects at once may be selected for the operation with *Group Editor* or with the tool itself. To modify all objects of the group, point at any of them.

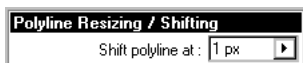
To change or form the group, hold *Shift* down and click objects with the mouse left button. Repeated left click excludes an object from the group.

When the group is ready, release *Shift* and start the operation.

First stroke of *Esc* deselects object(s) and the second quits the tool.

Parameter bar of Polyline Resize / Shifting

Parameter bar
Of Polyline Resize / Shifting tool



Parameter bar of the tool is very simple - only step of displacement may be specified here (measured in pixels of the image). Shift direction and expansion / contraction depend on the mouse left or right button.

Bookmarks - positioning tool

The tool provides convenient means to memorize the current position of the working window and the scale of screen output, i.e. to make a bookmark. In future, you will be able to open the marked project part instantly.

There may be several bookmarks in the project. You may jump from one of them to another, to and fro, in the order of bookmark forming.

Bookmarks are not shown during the work but short blinking of the project frame confirms bookmark forming.

The following commands are provided for tool control:

- make a bookmark *Ctrl+F5*;
- jump to the previous bookmark *F5*;
- jump to the next bookmark *Shift+F5*;
- delete the current bookmark and jump to the next one *Alt+F5*;
- delete all bookmarks.

If the current working window overlaps the current bookmark and you want to jump to the next one, the command restores the scale and position of the current bookmark first. Input the command again to shift the working window.

Bookmarks were one of the first tool designed for marking of project areas and working windows positioning on them. It is reasonable now to use Inspector instead of Bookmarks at total check of the project.

Besides, any object may be attributed to the special vector layer (`_ERRORS_`) to mark a doubtful situation. It is convenient to use circles. Hot keys «F» and «V» provide automatic positioning on objects of this layer.

Another way of quick review is to create an additional layer, to attribute doubtful objects to it and to make them marked with the help of Group Editor. Marked Object Navigation view mode enables quick positioning of the working window on them.

Inspector

Vectorizing is a chaotic process in essence. Correction of one object prompts the operator to correct the neighboring one, and so on.

On the other hand, the entire project field should be reviewed in order, without omissions and senseless iterations.

Our *Inspector* tool was designed for this purpose. In general, the process is organized in the following way:

- Choice of inspection zone. It may be of an arbitrary form, but the vector frame of the project is mostly in use. The entire project field is the inspection zone by default;
- Choice of review scale. This parameter together with the size of your project control the size of the project part represented in the working window - so called «*frame*». User-specified overlapping of neighboring frames ensures total review without omissions near frame borders;
- The tool divides the entire inspection zone into frames that you may review in order. Press «4» to proceed to the next frame and «5» to return to the previous one.
- The tool allows you to overstep the limits of the current frame and/or to change the scale at editing. *Shift to the next frame* command restores the scale and position of the current frame first. Actual shift happens when you repeat the command.

You may change inspection scale or frame overlap even after partial execution of review with the help of *Continue* button. The program recalculates partition of inspection zone into frames and you continue the operation without an omission or repeated review.

Inspection zone specifying

Working zone of *Inspector* coincides with the project field by default but it is not always convenient.

First, your project may be based on an image with spacious edge information that does not require review.

Second, project field's region of interest may be non-rectangular. For example, map sheets may be trapezoid or your project may comprise several maps.

The most convenient way to specify the zone of inspection is to point at the vector frame of the project (or several frames if the projects consists of several map sheets).

Another often situation that requires ordered control is the joining zone of adjacent sheets. In that case, use inspection trajectory (along a line) instead of inspection zone.

Submenu of the tool enables you to specify review parameters.

Commands of Inspector tool submenu

*Additional menu
of Inspector tool*



- rectangular zone
- arbitrary zone
- specify borders
- delete zones

Contextual menu of the tool is an icon bar you can open by a right click within the program working window. It consists of the following commands:



Rectangular zone

You may specify a rectangular inspection zone in this mode.



Arbitrary zone

You may specify an arbitrary inspection zone in this mode.



Specify borders

The current border of inspection zone will be changed when you complete setup.

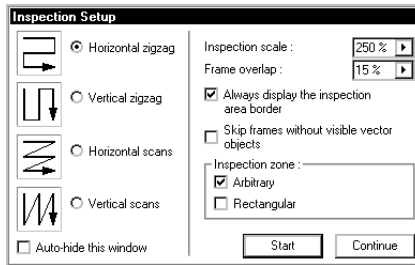


Delete zones

Cancels specified inspection zones.

Parameters of Inspector tool

Inspection Setup
dialog box



Review direction group - select convenient direction of working window shift at review. Horizontal and vertical zigzag are mostly in use.

Inspection scale - specify the scale of frame. It does not impede arbitrary zoom at review. Scale change does not derange the order of inspection zone passing.

Frame overlap - specify the size of frames' mutual overlapping, both horizontal and vertical. Project area within the overlapping band will be represented in both frames. It helps the operator to «keep orientation» at frame change.

Always display the inspection area border - borders of the inspection zone remain visible when you close the *Inspection Setup* dialog box.

Skip frames without visible vector objects - automatic jump over frames without visible vector objects.

Auto-hide this window - if on, the dialog box will be minimized when you move the cursor outside it to specify the border of the inspection zone.

Start - closes the dialog box and shows the first frame of the inspection zone. Review always starts from the upper left corner of the zone or the first point of the specified trajectory.

Continue - if *Inspection scale* and/or *Frame overlap* parameters are changed during inspection, the program recalculates partition of the inspection zone into frames. *Continue* button enables you to resume the operation without omission or iteration.

