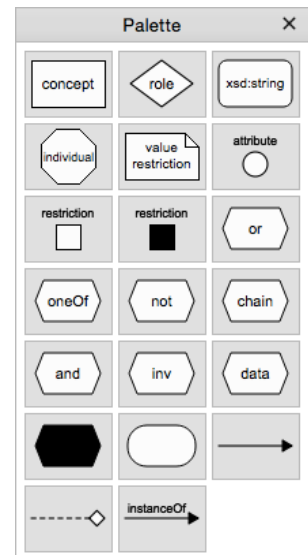


GrapholEd v0.3 – Quick Reference

Inserting elements to the diagram

Inserting nodes and edges in the diagram is the very first basic operation needed to construct ontology axioms. GrapholEd provides a Graphol palette, available in the left sidebar, from which the user can select the node/edge he wants to add in the diagram. While node's and edge's insertion are very similar operations, we are going to describe them separately to better highlight differences.



Inserting nodes

To insert a new node, the user needs to select it from the Graphol palette and then perform a click with the mouse left button on the position where he wants the new node to be inserted. After the node insertion, the previously clicked button in the Graphol palette will be deselected.

NOTE: If the user wants to quickly insert multiple nodes of the same type, he needs to hold the CTRL keyboard modifier (CMD on Mac OS) while performing the node insertion: after the node is added to the diagram, the previously clicked button in the Graphol palette will stay selected and the user can perform another node insertion.

Inserting edges

To insert a new edge, the user needs to select it from the Graphol palette, perform a click with the mouse left button on the node to be used as a source of the relation and without releasing the mouse left button, drag the edge head over the node to be used as target of the relation. Finally release the mouse left button to complete the edge insertion.


NOTE #1: If the user wants to quickly insert multiple edges of the same type, he needs to hold the CTRL keyboard modifier (CMD on Mac OS) while performing the edge insertion: after the edge is added to the diagram, the previously clicked button in the Graphol palette will stay selected and the user can perform another edge insertion.

NOTE #2: If the mouse left button is released while the edge being inserted is targeting no node in the diagram (there is no node shape below the mouse cursor), the edge will be removed from the diagram.

NOTE #3: Once an edge is added between 2 nodes, it can't be detached from one of the endpoints.

Selecting elements



GrapholEd provides different options to select elements in a diagram:

1. Mouse click: select the desired node by using the mouse left button. If there is the need of selecting multiple nodes, the user needs to held the CTRL keyboard modifier (CMD on Mac OS) while performing sequential mouse clicks.
2. Rubberband drag: press the mouse left button on the diagram, and without releasing the mouse left button drag the mouse pointer over the scene: as a result of this operation a rubberband rectangle will be painted on the viewport. GrapholEd will select all the elements whose area intersects the rubberband. Note that the viewport will move according to the mouse position whenever the mouse goes out the viewport area while a Rubberband selection is in progress: this allows the selection of nodes which are not displayed together in the viewport area (really far in the diagram).
3. Global selection: all the elements in the diagram can be selected in a single operation by using the  **Select All** action available in the diagram contextual menu and in the Edit menu available in the Main menu bar. The global selection can be triggered also using a keyboard shortcut: CTRL+A (CMD+A on Mac OS).

Moving elements

The only elements that can be freely moved in the scene are nodes. As previously mentioned, edges can't be detached from their endpoints, so they can't be moved. To move nodes in the diagram, the user needs to select the desired nodes (see previous paragraph) and drag them across the scene using the mouse left button. When nodes are being moved, connected edges will follow accordingly. The following 2 strategies are applied:

1. If edge's endpoints are both in the selection, the edge will be moved altogether with all the selected nodes (all the edge breakpoints and anchor points are moved).
2. If only one of the edge endpoints is in the selection, edge's breakpoints will stand still, and only the anchor point in the node endpoint in the selection will be moved together with all the other elements.

Overlapping nodes can also be moved along the Z axis. Nodes' contextual menu provides 2 operations:  **Bring to Front** and  **Send to Back** whose behaviors is pretty self explanatory. Both the actions are also available in the toolbar and work well also with multiple selected nodes.

Resizing nodes


Some predicate nodes' shapes can be resized by the user. The predicate nodes that can be resized are: Concept, Role, Individual, Value Restriction. To resize a node the user needs to select it using the mouse: this will highlight 8 resizing handles (identified by an ellipse ◉). By clicking a resize handle with the mouse left button, the user will trigger the interactive resize mode: without releasing the mouse left button, the user can drag the resize handle across the diagram, and the node will be resized according to the new position of the selected handle. Finally, by releasing the mouse left button, GrapholEd will exit the interactive resize mode.

Moving edges' anchor points

Edges anchor points are the points inside the source and target nodes defining the geometrical endpoint of the edge. While edges can't be freely moved in the diagram, GrapholEd offers the possibility to move edge anchor points. This is particularly useful to improve readability for nodes with a high degree: the anchor point of each edge can be moved within the endpoint shape so edges won't overlap.


To perform anchor point movement, the user needs to select the edge whose anchor point needs to be moved: the edge selection will highlight the anchor points inside the endpoints' shapes (identified by an ellipse ●). The user can then drag the anchor point using the mouse left button. Note that the anchor point is bounded to the endpoint shape: this prevents edges' from being detached from the source and target nodes.

Bending edges

Edges connected to endpoints can be split into multiple segments: this helps a lot in improving diagrams' readability. To bend an edge, the user needs to perform a click with the mouse left button on the point of the edge where he wants the bending to happen and, without releasing the mouse left button, move the mouse cursor: this action will create a new breakpoint on the edge, on the clicked position (identified by an ellipse ●), and such breakpoint will follow the mouse position. Breakpoints can later be moved around using the mouse, or removed: the removal of a breakpoint is available in the breakpoint contextual menu (right click with the mouse in the exact position of the breakpoint and select the  Remove breakpoint menu entry).

Moving node's labels

GrapholEd offers the possibility of moving node labels from their default position. Not all the labels can be moved. In particular, the label moving operation is supported for the following predicate nodes: Concept, Role, Individual, Value Restriction and Attribute. To move the label of a node the user needs to click on it using the mouse left button while holding the CTRL keyboard modifier (CMD on Mac OS): without releasing any of the buttons, perform a move operation till the desired position. Finally release the key combination to complete the moving operation.

The user can bring back the label in its original position by using the  Reset label position submenu entry in the node contextual menu (available only when the label has been moved from the default location).


Editing node's labels

Some predicate node's label can be freely edited by the user. The following predicate node's labels can be edited: Concept, Role, Individual, Value Restriction and Attribute. To edit node labels, the user needs to perform a double click operation using the mouse left cursor on the label to edit: this will activate the label edit mode. From now on every keyboard button pressed will be forwarded to the label, hence the label text can be changed. There are 2 ways of terminating the label editing:


1. Perform a mouse click outside the label area.
2. Press the ENTER key.

Since the ENTER key will terminate the edit mode, to enter a newline character in the label text the user needs to press the ENTER key while holding the SHIFT keyboard modifier.


Change value-domain node datatype

By default, when inserting a new value-domain node in a diagram, the default datatype will be selected: `xsd:string`. The user can later change this datatype using the  **Select type** submenu available in the value-domain node contextual menu.


Switch hexagon based constructor node

Constructor nodes identified by a hexagon shape can be switched to a different node type (having the same shape). The user can select the new node type from the  **Switch to** submenu available in all the hexagon based constructor nodes. All the edges connected will be moved onto the new node, preserving breakpoints and anchor points.

Selecting special concept node's type


GrapholEd provides an easy way to define the special concept nodes TOP and BOTTOM (they respectively represents the owl concepts `owl:Thing` and `owl:Nothing`). An ordinary concept node can be turned into one of these special types using the  **Special type** submenu entry available in the concept node contextual menu. If the user needs to change a special concept node type into an ordinary concept node, he just needs to perform the very same operation.


Composing axioms

To ease ontology construction, GrapholEd offers several shortcuts that can be used to compose Graphol axioms, such as Transitivity, Symmetry, Asymmetry, Functionality, etc. These shortcuts are available under the  **Compose** submenu entry in the Role and Attribute nodes contextual menu.

Coloring nodes

GrapholEd offers the possibility to change the color of Predicate nodes. Differently, Constructor nodes' background color can't be changed, because while the coloring of a Predicate node is a harmful operation, changing the color of a Constructor node may change the meaning of the node itself. GrapholEd provides 2 ways to change Predicate nodes background color:

1. Perform a multiple node selection, click on the bucket  icon in the toolbar and select the desired color from the popup menu: as a result of this operation, the background of all the previously selected nodes will be changed using the newly selected color.

2. Bring up the contextual menu for the node whose background color needs to be changed, and select the desired color using the  **Select color** submenu entry: this operation changes the background of the selected node only.

Scaling the diagram viewport

GrapholEd allow the user to change the scale of the diagram viewport (zooming in/out portions of the diagram). There are 2 ways of performing this operation:

1. Use the zoom control widget available in the toolbar which means moving the slider handle to the left (reduce) or the right (increase) to change the zoom level.
2. Alternatively, the user can make use of the mouse to perform the same operation: while holding the CTRL keyboard modifier (CMD on Mac OS), rotate the mouse wheel forward (increase) or backward (reduce) to change the zoom level. In addition, performing the scale change using this way will focus the zoom on the area below the mouse cursor, allowing the user to quickly zoom/highlight elements in the scene.

Moving viewport

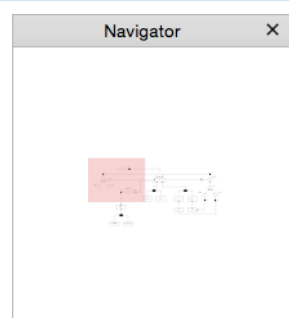
It is possible to manually move the viewport area to change the main view to browse a different part of the diagram. This can be achieved in 3 ways:

1. Make use of the viewport scrollbars.
2. Make use of the LEFT, RIGHT, UP, DOWN arrows of the keyboard.
3. Hold the mouse center button while moving the mouse over the viewport area: this will drag the underlying diagram that will follow the mouse position.

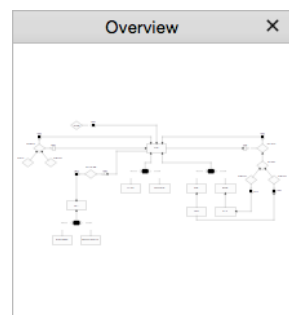
Extra widgets

GrapholEd provides 2 extra widgets in the right sidebar which are meant to help the user in navigating the diagram: Navigator and Overview. While being very similar, they provide different information.

The Navigator displays the whole diagram into a block: the portion of the diagram currently visible in the main view area is highlighted with a red rectangle.



The Overview displays only the portion of the diagram where the user added elements: this offers a much more clear view over the whole diagram with respect of the Navigator, but it lacks the information of the current position of the main view area.



Both the widgets are interactive: the user can press the mouse button on the widgets and the viewport will scroll until the selected diagram point is centered in the main view area. Also note that those widgets (like the Graphol palette) can be completely closed, to increase the workspace area. They can be later re-opened from the View menu in the Main menu bar.