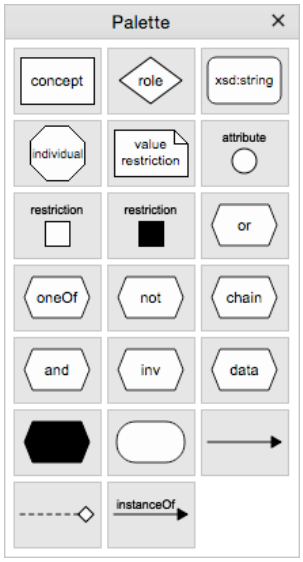
GrapholEd v0.3.1 – Quick Reference

Inserting elements in 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 in the diagram

To insert a new node in the diagram, the user must select it from the **Graphol palette** and then click the left mouse button on the position where the node is to be inserted. After the insertion of the node, the button in the Graphol palette will be deselected.

To insert multiple nodes of the same type, the user must hold the CTRL keyboard modifier (CMD on Mac OS) while performing the node insertion. After the insertion of the node, the button in the Graphol palette will stay selected.

Inserting edges in the diagram

To insert a new edge in the diagram, the user must select it from the Graphol palette and then click the left mouse button on the node that is the source of the edge, and without releasing the left mouse button, drag the edge head over the node that is the target node of the edge, and release the left mouse button to complete the insertion of the edge.

To insert multiple edges of the same type, the user must hold the CTRL keyboard modifier (CMD on Mac OS) while performing the edge insertion. After the insertion of the edge, the button in the Graphol palette will stay selected.

If the left mouse 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.

Selecting items in the diagram: nodes and edges

GrapholEd provides different options to select items in a diagram:

1. Mouse click: select the desired item by using the left mouse button. If there is the need of selecting multiple items, the user needs to held the CTRL keyboard modifier (CMD on Mac OS) while preforming sequential left mouse clicks.

2. Rubberband drag: press the left mouse button on the diagram, and without releasing the left mouse 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, accessible through right mouse click on the scene, and in the Edit menu available in the Main menu bar. The global selection can be done also using a keyboard shortcut: `CTRL+A` (`CMD+A` on Mac OS).

Moving elements in the diagram

Nodes can be freely moved in the diagram. To move nodes, the user must select the desired nodes by either left mouse click (hold CTRL to choose multiple nodes) or through rubber-band mouse drag, and drag them across the scene using the left mouse button. When nodes are being moved, edges connected to the nodes will follow accordingly.

If both edge endpoints are in the selection, all the breakpoints and endpoints of the edge will move with the selected nodes. If only one of the edge endpoints is in the selection, the breakpoints of the edge will not move, and only the anchor point in the endpoint in the selection will move with the selected 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 a small ellipse). By clicking a resize handle with the left mouse button, the user will enter the interactive resize mode: without releasing the left mouse 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 left mouse button, GrapholEd will terminate the interactive resize.

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 a small ellipse). The user can then drag the anchor point using the left mouse button.

The anchor point is bounded to the endpoint shape: this prevents edges' from being detached from the source and target nodes.

Bending edges: breakpoints

Edges can be split into multiple segments by introducing breakpoints. To add a breakpoint to an edge, the user must click the left mouse button on the point in the edge where the breakpoint must appear, and, without releasing the left mouse button, move the mouse cursor.

Breakpoints can be moved using the mouse or removed, through the breakpoint contextual menu, available by clicking the right mouse button in the position of the breakpoint.

Node labels: moving

Labels for the Concept, Role, Individual, Value Restriction, and Attribute nodes can be moved from their default position. To do so, click the left mouse button on the label while holding the CTRL keyboard modifier (CMD on Mac OS), move the cursor to the desired position, and release the key combination to complete the operation.

The user can bring back the label in it's original position by using the **Reset label position** action available in the node contextual menu (the action is available only when the label has been moved from the default location).

Node labels: editing

Labels for the Concept, Role, Individual, Value Restriction, and Attribute nodes can be edited. To do so, double click the left mouse button in the label: this activated the label editing mode. Type in the new label, and then either press the ENTER key or perform a mouse button click outside the label area to exit the label editing mode.

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 the datatype of the Value-domain node

By default, the datatype of a new value-domain node will be xsd:string. A different datatype can be chose through the **Select type** submenu of the value-domain node contextual menu, accessible through right mouse click on the value-domain node.

Change constructor node type

Constructor nodes identified by a hexagon shape can be switched to a different type (among those of the same shape), through the **Switch to** submenu of the hexagon constructor node contextual menu, accessible through right mouse click on the constructor node.

Concept node special types

GrapholEd provides an easy way to define the special concept nodes TOP and BOTTOM (that 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.

Role and Attribute nodes' shortcuts

GrapholEd offers shortcuts to automatically compose Graphol assertions for roles and attributes such as Functionality, Transitivity, Symmetry, Reflexivity, etc. These shortcuts are available under the **Compose** submenu in the Role and Attribute node contextual menu, accessible through right mouse click on the Role or Attribute node.

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. To change the background color of Predicate nodes, the user needs to select the interested nodes, 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.

Alternatively, the user can select the background color through the **Select color** submenu entry available in the Predicate nodes' contextual menu, accessible through the right mouse click on the predicate node. This alternative operation changes the background of the selected node only.

The GrapholEd viewport: moving

Moving the viewport area to browse different parts of the diagram can be performed in four ways:

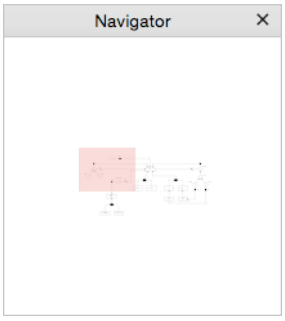
1. Through the viewport scrollbars;
2. Through the LEFT, RIGHT, UP, DOWN arrows of the keyboard;
3. By using the mouse wheel (vertically) and mouse wheel left/right tick (if the mouse provides this feature)
4. Holding the center mouse button while moving the button over the viewport area: this will drag the underlying diagram according to the movement of the cursor.

The GrapholEd viewport: zooming in and out

Zooming in and out to change the scale of the viewport can be performed in two ways:

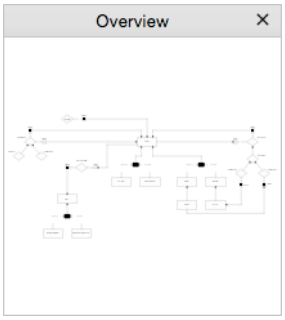
1. Through the zoom control widget in the toolbar: move the slider handle to the left to reduce or to the right to increase the zoom level;
2. Holding the CTRL keyboard modifier (CMD on Mac OS), rotate the mouse wheel forward to increase or backward to decrease the zoom level. Doing so will also focus the zoom on the area below the mouse cursor, allowing the user to quickly zoom or highlight elements or areas in the scene.

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 cleat 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.