# Overview

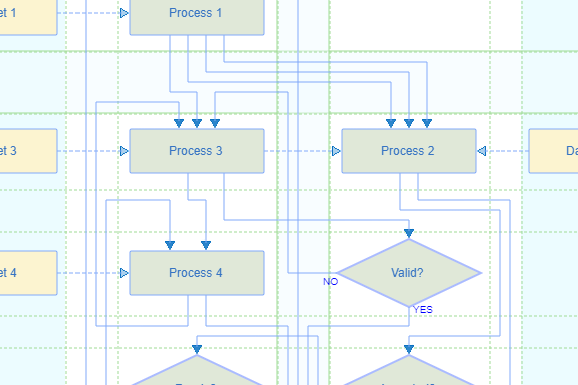
The JDElite diagram editor is a powerful interactive tool for creating and editing directed graph diagrams of any complexity in a Web browser. It is implemented in JavaScript and runs in a browser, rendering the drawing in HTML5 canvas element. The user manually chooses or changes the positions of the nodes on the canvas grid, assigns the connections between nodes interactively by using the mouse, and the editor automatically performs routing or re-routing of the links. The demo version herein includes most of the built-in features necessary to achieve the superior readability of the diagrams and the efficient link crossings reduction (patent No. US 10,424,096).

This document describes the features of JDElite diagram editor. Here are video clips showing some of the steps to create and edit a diagram:

<myDiagram1.mp4> <myDiagram2.mp4> <myDiagram3.mp4> <myDiagram4.mp4>

The demo editor contains three sample diagrams accessible from the Open menu. These samples are fully editable. The changes made on the samples cannot be saved.

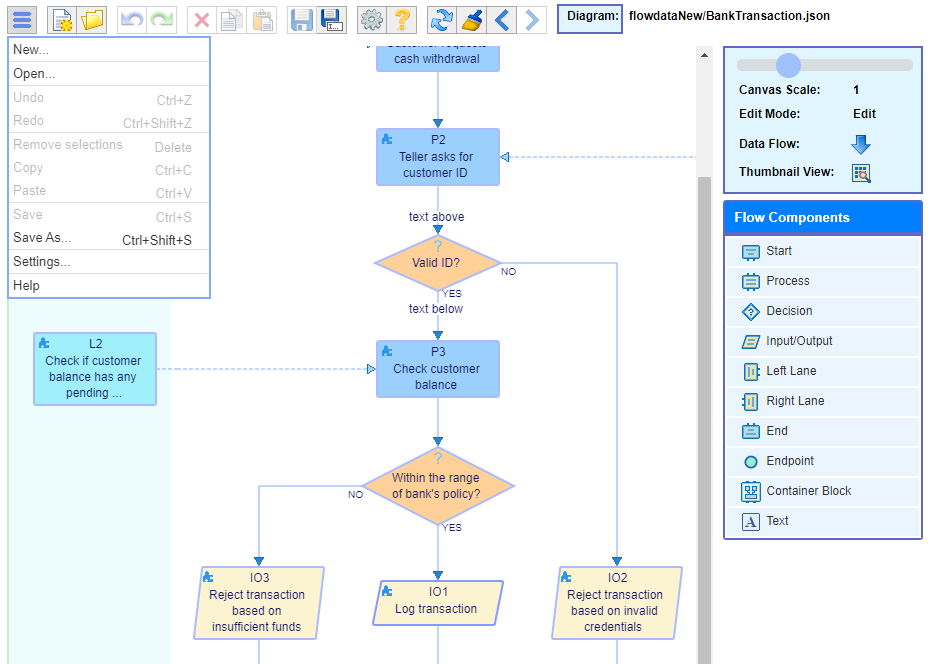
The flow direction of the diagram can be either top to bottom or left to right and can be switched at any time. The positions of the nodes are mapped to a rectangular dynamic grid that consists of layers across the flow direction and lanes along the flow direction, where the nodes are positioned in the cells at the intersections. The layers are separated by layer pipes and the lanes are separated by lane pipes, and it is along these pipes where the links are routed. The canvas structure is optionally highlighted on mouse move.



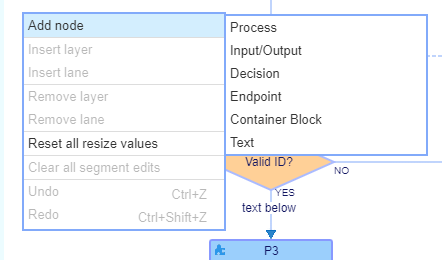
The user assigns each link connection between two nodes by dragging the mouse pointer between the popup handles on the nodes. The editor calculates the shortest path and creates the link along the pipes for that path. The patented routing techniques provide a highly efficient reduction of the crossings between the links.

Following is a description of the wide range of features, accessible from the toolbar, from the context menus, or by using the mouse pointer.

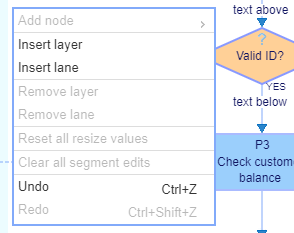
* New diagrams are created and stored on the file system or elsewhere on a server in JSON format. The stored diagrams are accessible for editing. All functions of the editor are present in the provided demo version except the saving capabilities that require a server connection.



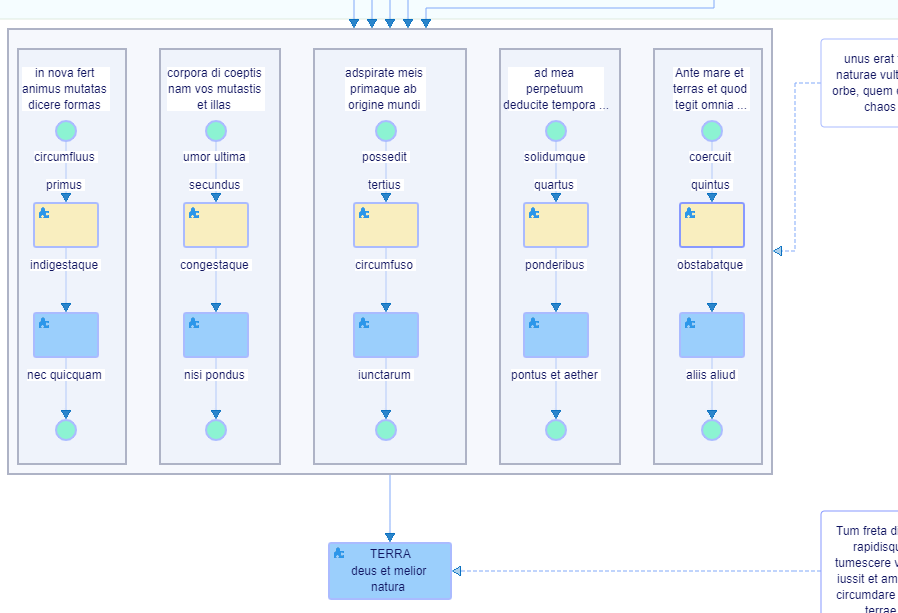
* A new node is created either by dragging a node item from the palette on the right to an accepting cell on the canvas, or by selecting a node type from the context menu in an empty cell. If a node item from the palette is dropped over a link, the link is broken into two new links.



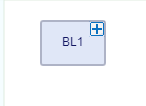
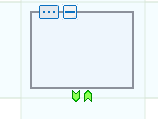
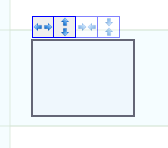
* The diagram frame size can be modified at any time by inserting new layers or lanes and removing the empty ones.



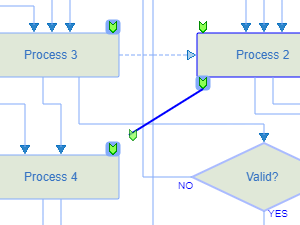
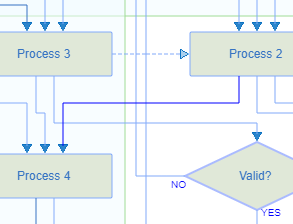
* Container blocks with two levels of nesting allow the user to create functional groups of nodes.

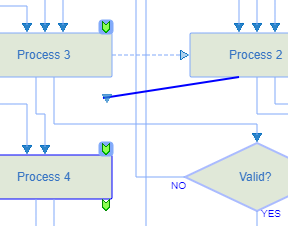
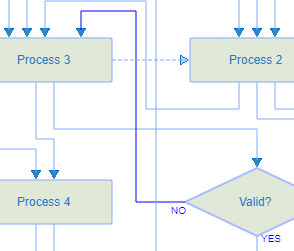


After the initial drop, as well as at any time later, a block can be expanded or collapsed by clicking on the expand/collapse icon. The block can be sized to the desired dimension by extending or shrinking it in any direction using the resize menu that pops up at the upper left corner of the outline in expanded state. If there is not enough free space around the block to expand or extend it, additional layers and/or lanes have to be inserted.

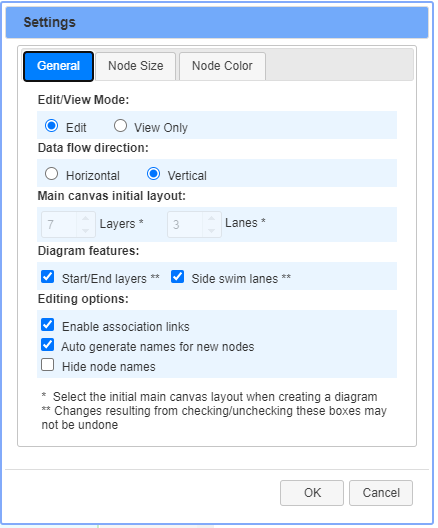
  

* As mentioned above, the connections between the nodes are created by dragging the mouse between the connection handles that are popping up on the outlines of the accepting nodes under the mouse pointer. The connection is routed after the mouse pointer is dropped over an accepting handle and the handle is highlighted. Later on, a connection can be reassigned by dragging any of the ends of the link to an accepting handle on a different node. The tooltips under the mouse pointer suggest the appropriate action in a particular context.

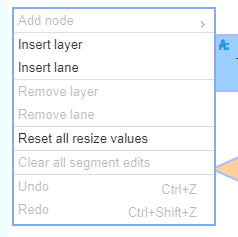
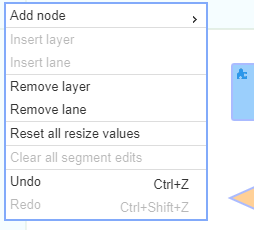
 

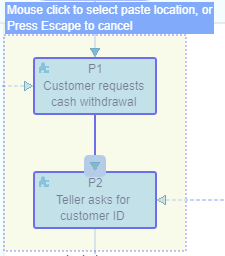
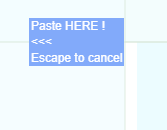
* There are special start and end layers, as well as left and right swim lanes. They all accept their specific node types from the palette or from the mouse context menus. These layers and lanes can be added or removed through the Settings dialog.



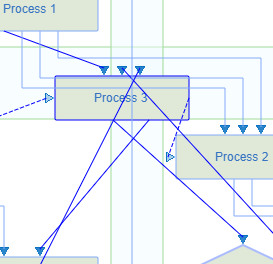
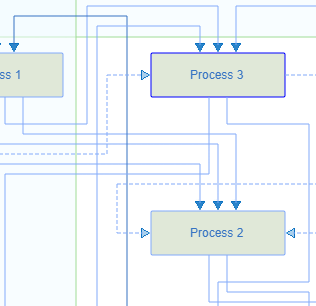
* The dimensions of the initially specified canvas grid can be changed at any time by adding new layers or lanes, or by removing empty ones, using the context menus in the corresponding locations.

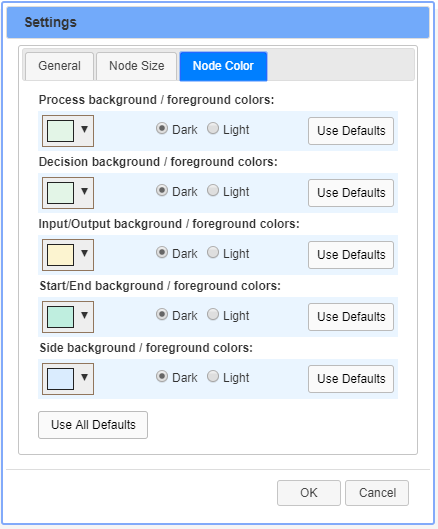
* In addition to the standard link connections, there is an optional category of association links. They can be traced sidewise between the nodes, and are represented by dashed lines, as shown on the diagrams.
* The data flow direction can be initially selected to be either top to bottom or left to right, and can be changed or switched back and forth at any time by double-clicking the on-screen ‘Data Flow’ button above the palette or from the Settings dialog. The diagram is rotated and flipped without otherwise affecting its content.
* The nodes and the links can be selected by the mouse. Multiple selections are carried out by either pressing Ctrl + click or by pressing Shift + drag. Selections can be removed using the toolbar, the context menu, or the keyboard.
* Selections by Shift + drag can be copied and pasted. The paste location is selected by the mouse after the copy action.

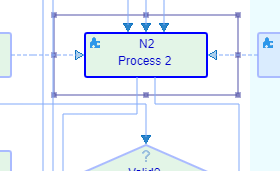
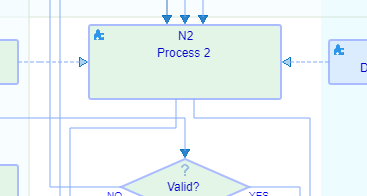
* Nodes can be moved at any time during the design process by simply dragging them with the mouse to new locations. The dragged node can be dropped over an empty cell, or over a layer pipe or lane pipe. In the latter case a new layer and/or a new lane are first created, then the node is positioned in the new cell under the mouse pointer. The connected links are rubber-banded and re-routed automatically.

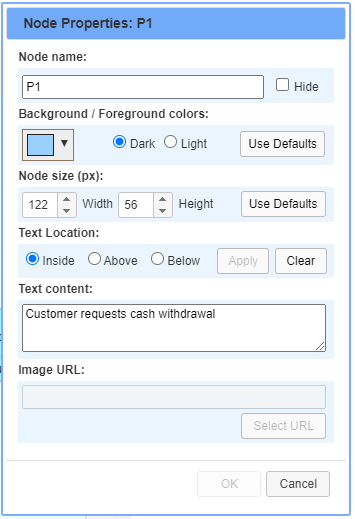
* The Settings dialog allows you to modify the node sizes and the node colors by category:

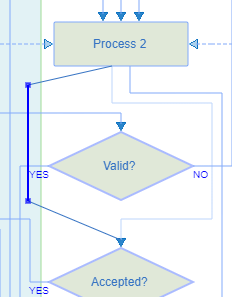
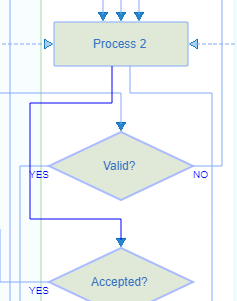
* The node shapes can be resized individually by the mouse pointer:

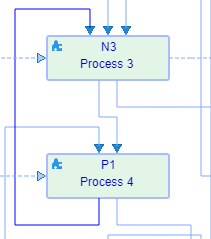
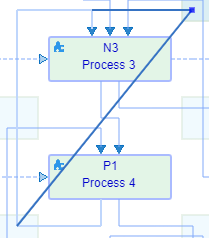
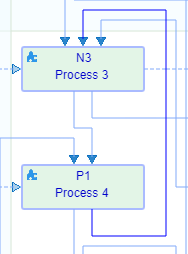
* The node properties can be edited from the node properties dialog, which is accessed from the context menu on the node or by double-clicking the node. The created nodes are assigned names that are either automatically generated or are user provided according to the selection in the Settings dialog, and have to be unique. The names can be hidden from being displayed. The color values and the sizes are specific to the selected node and they override the values that are set globally in the Settings dialog. A reasonably sized text content can be added inside the node, as well as above or below it. Changing the node icon needs a server connection to an icon repository.



* Segments can be moved, with certain restrictions, to accepting parallel pipes. The actions to modify the size of the canvas grid may reset these edits.

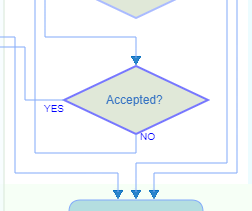
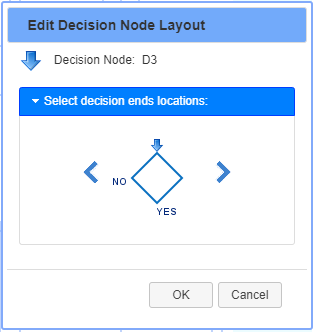
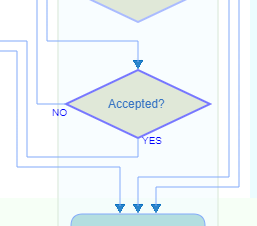
 

* Corners of segments can also be moved to some accepting locations in order to re-route the link.

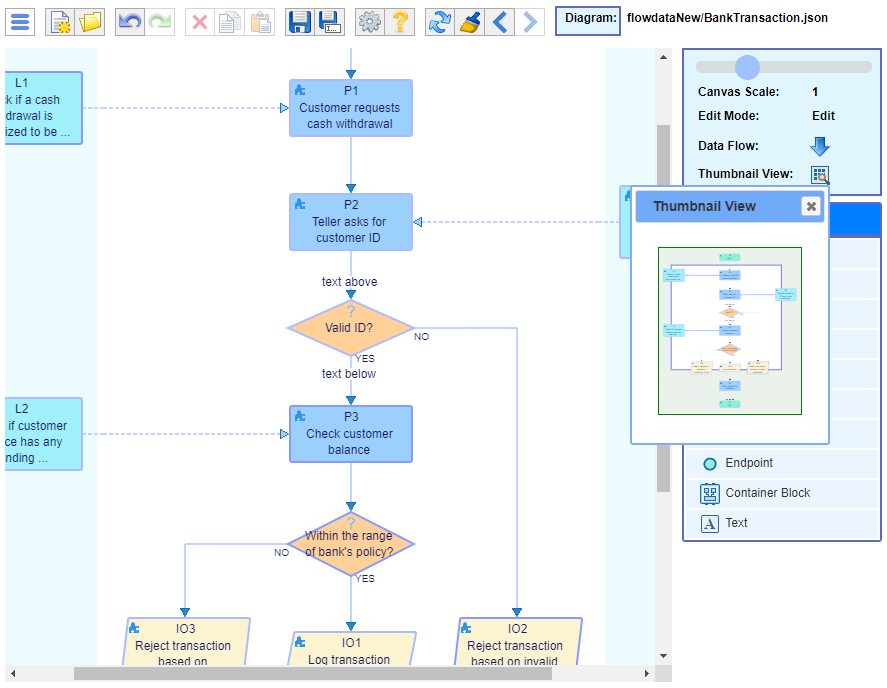
  

* The configuration of the outputs of the decision nodes can be edited from the Edit dialog, which is accessed from the context menu on the node, by selecting the desired layout with the arrow buttons. The connected links are re-routed.

Before: After:

* All described editor actions are undoable with unlimited number of undo/redo steps (except node resizing and node color selections).
* The editor comes with a thumbnail view showing a viewport window on the canvas. This window helps to navigate large diagrams. It is scrollable by mouse dragging.



NOTE: The flexible framework architecture of JDElite diagram editor can be integrated easily into most Web diagramming frameworks. Specific extensions are implemented by plugging particular sets of visuals and corresponding layout rules. The JSON format allows for the attachment of additional properties to the artifacts specific to any particular case.