UI design

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Graph edit mode:

behaviour	UI implementation	Done?
Add nodes	1. Button "*add node*" creates node and attaches it to cursor to be placed with a click on the canvas (Esc to abandon process at any stage). Upon positioning, an entry pops up near the node to input the name. Pressing enter destroys the entry and creates a label near the node if no other node already has that name. 2. Button "*add node*" and name entry in Control panel. First type the name, then press the button to place the node and label on the canvas unless another node already has that name. Both can then be repositioned via drag-and-drop.	
Remove nodes	1. Button in control panel to enter "*Graph edit mode*". Clicking any edge or node selects and highlights it opening it's settings in the control panel (particle properties like name, mass, position etc.) with a delete button. 2. Button in control panel to enter "removal mode". Clicking any node while removal mode is active immediately deletes it.	
Rename nodes	1. Via *Graph edit mode* as described above 2. Button "*rename node*" to activate renaming mode. If a node (or label) is clicked, an Entry pops up near that node to rename it (just like when adding a node with 1.)	
Move nodes	1. Currently drag and drop is always available for all particles. 2. Only allow moving when edit mode is enabled.	**done (1.)**
Add edges	1. Button "*add edge*" enters node selection mode. Clicking two different nodes on the canvas will add an edge between them. The first clicked node is highlighted. If it is clicked again, it is deselected. Press Esc at any point to abandon process. 2. Button "*add edge*" shows two drop-down menus where start and end node can be selected. An additional buttons creates the edge between the two selected nodes. 3. In "*Graph edit mode*" (see remove nodes), when a node is already selected, click another node while holding Ctrl or Shift to select a second one. Then the settings show a list of all edges between those nodes (multi-edge support). For each edge, show an entry to display and change the length, a color selector and a delete button. Finally add one button to add an edge with selectors for length and color.	
Remove edges	1. Same as remove nodes. Removing any edge particle removes the entire edge. 2. Same as remove nodes. Removing an edge particle shortens the edge by 1 and deletes that particle	
Change edge length	1. See add edges (3.) 2. In "*Graph edit mode*" (see remove nodes), clicking any edge particle shows options for color and length of the edge.	
Change edge color	1. See add edges (3.) 2. Button "*change edge colors*" in control panel. When clicked, opens a color selector (for current colors). Clicking any edge particle changes the entire edge to that color.	
Move edges	1. Currently drag and drop is always available for all particles. 2. Only allow moving when edit mode is enabled.	**done (1.)**

Notes:

- Keep a list of all currently used Ids. Whenever a new particle is added, choose the lowest id >= 0 that is not used yet.
- Keep a list of recent changes (additions, deletions, moving particles) and implement undo function. Most important: deletions

Questions:

- Where should a new edge particle (increased length) be placed?
  - Between last edge particle in edge and connected node. -> rescale all other particles along node-node vector to make space.
  - Apply layout optimizer to just those edges for a few steps.
- How should edge particles be repositioned if an edge is shortened?
  - Rescale positions along node-node vector
  - Apply layout optimizer to just those edges for a few steps.
  - Don't change the other particles.
- Should the user be able to create labels without associated nodes or nodes without labels?