# User Requirements specification

GROUP A

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## Introduction

The network flow system allows the users to plan out a pipeline to see measure how the flow would be distributed. The user is provided with various elements that would replicate real life objects to control the flow on the pipeline.

This document will introduce you to the requirements of this system in order for it to provide an easy and intuitive way to structure the pipeline.

## Functional Requirements (use cases )

**Draw any element into the drawing panel (pump, splitter, adj. splitter, sink and merger)**

1. User clicks on any of the elements from the toolbar on the left hand side of the program
2. Afterwards the system highlights the element clicked
3. The user left clicks inside the drawing panel
4. The system checks if the area is free
5. The element is placed on the drawing panel

Alternatives:

3.1 The user attempts to draw outside the panel – nothing happens

3.2 The user attempts to draw on top of another element – nothing happens

**Remove an element or connection**

1. The user selects the remove tool from the left hand side of the program
2. The system highlights the tool
3. The user clicks on any element he wants to remove inside of drawing panel
4. The system removes that element and any connected pipes to it

Alternatives:

3.1 The user clicks outside or not on a element – nothing happens

**Select any element inside the drawing panel**

1. User clicks on the select tool from the toolbox on the left hand side of the program
2. The system highlights the tool in the toolbox and shows the points of connection of all elements
3. The user selects an element
4. The system shows the current flow and max flow for the element

Alternatives:

3.1 The user tries to select anything outside the drawing panel – nothing happens

3.2 The user tries to select a pipe – nothing happens

4.1 The user has selected an adjustable splitter - a dropdown menu appears where you can adjust the percentages of the outgoing flow

**Move any element inside the drawing panel**

1. The user clicks on the select tool on the left hand side of the program
2. The system highlights the tool selected
3. The user then drags any element he wishes to move
4. The system sets the final position when the dragging has finished

Alternatives:

3.1 The user attempts to drag outside the panel – the element remains within

3.2 The user attempts to drag on top of another element – the element is reverted back to its last known position

**Connect to elements together**

1. The user clicks on the pipeline element button
2. The user hovers on an element’s connectable point
3. The system highlights the element’s point as available
4. The user clicks on an element’s connectable point
5. The system begins the connection
6. The system highlights this point as in use
7. The user repeats 3,4 to connect to an end point
8. The system connects the two points

Alternatives

3.1The element has an active connection at that point – The system highlights the point as unavailable  
 4.1The element has an active connection at that point – The system does not allow this connection  
 4.2The user clicks outside of the connection point – Nothing happens  
 7.1The connection results in a circular network - the point is marked as unavailable

**Undo**

1. The user clicks the undo button
2. The system removes the last change done
3. The system registers to the redo stack this change

Alternatives

1.1Nothing to undo – the button is disabled, un-clickable

**Redo**

1. The user clicks the redo button
2. The system adds the last change un-done
3. The system registers to the undo stack this change

Alternatives

1.1Nothing to redo – the button is disabled, un-clickable

**Save a pipeline**

1. User clicks the save button
2. The user is prompted to provide a name for the file and a directory where to store it
3. The system stores the file as .pipeline

Alternatives

2.1The user specifies a file that exists in that directory – System checks if they want to overwrite  
 2.2The user specifies an invalid file name – System informs of the oddity  
 3.1The user’s operating system does not allow the save to occur – System informs the user

**Load a pipeline**

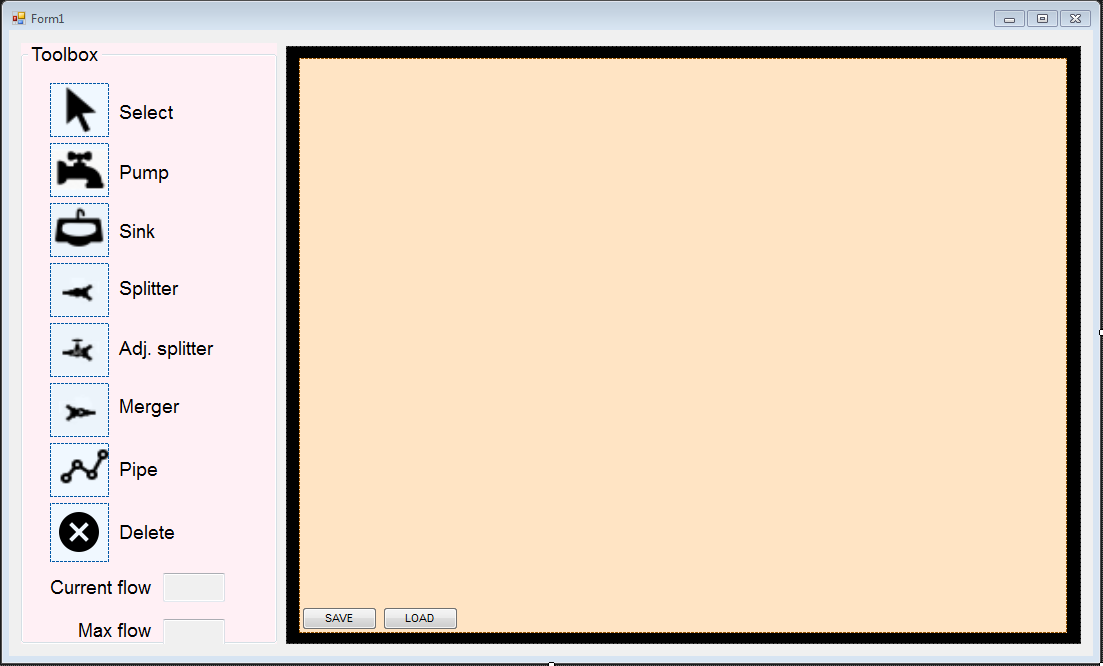
1. User clicks the load button
2. User selects a .pipeline to load
3. System loads the pipeline

Alternatives

1.1 User has unsaved changes – User is prompted if they want to save  
 2.1 User has selected a file that is corrupt or invalid – The user is informed of the oddity

## 

## User Interface

We created 2 basic wireframes to guide us in the design of the user interface.

## Non Functional Requirements

These are the key features that will outline our projects main quality standards. At run time the 3 main things we are aiming for will be usability, stability and performance. Our program will be easy and intuitive to use, as long as the user has some basic knowledge about flow diagrams. It will be stable over time and will not need much change after completion and lastly we will focus on its overall performance and try to ensure everything will run as fast as possible.

The program also focuses on extensibility in the overall structure of the system and the code itself. Meaning that after launch, if we so desire new features will be easily added without having to redesign or recode the program.