

EDISON

Electromagnetic Design of
flexIble SensOrs



Report 1: Block Diagram Designer

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1 Introduction

In the first quarter of project, the main focus was on learning the programming environment and principles that are worth keeping in when creating the application. The basic functionality of the program has been implemented and I tried to make the application look similar to current standards.

2 Completed Tasks

In the first period, the following activities were completed:

1. Learning how to use the WPF graphics engine, with particular emphasis on xaml files.
2. Getting well-trained in C# language and available components used to design applications with graphical interface.
3. Creating side test-applications to verify the correctness of the code snippets.
4. Analysis of the code available under an open license (WPF Diagram Designer[1]) containing mechanisms useful for the implementation of drawing block diagrams.
5. Editing WPF Diagram Designer[1] in terms of functionality, i.e. adding functionalities such as:
 - rotating elements (rotation is also performed on a group of selected objects) by using the keyboard shortcut Ctrl+R
 - functionality of zooming in and out of the view
 - expanding the possibilities of selecting elements
 - moving through space by dragging with the middle mouse button or by using Scrollbars
 - automatic adjustment of the view to the block layout by pressing the Spacebar
 - description labels for each block
 - displaying information about the currently selected block by UI PropertyGrid object
6. Editing WPF Diagram Designer[1] in terms of appearance in order to obtain a more modern design of the application by modifying:
 - styles for blocks
 - block connectors and connections
 - menu bar
 - toolboxes
 - icons

- size changing decorator of the block
 - selection decorator of object that adapts to its shape
7. Familiarization with design patterns with particular reference to the MVVM pattern that allows to maintain code purity and functionality by dividing it into the Model, View and ViewModel layers
 8. Creating MVVM layers and combining them with the current project by data binding. Layers can contain all information about the object e.g. inter-block connections.

3 Currently Performed Tasks

Current tasks focus on code cleaning in order to obtain clearer separation between ViewModel and View layers to be able to write tests in the future.

4 Current look of simulator

The simulator in the current state looks as follows on Figure 1

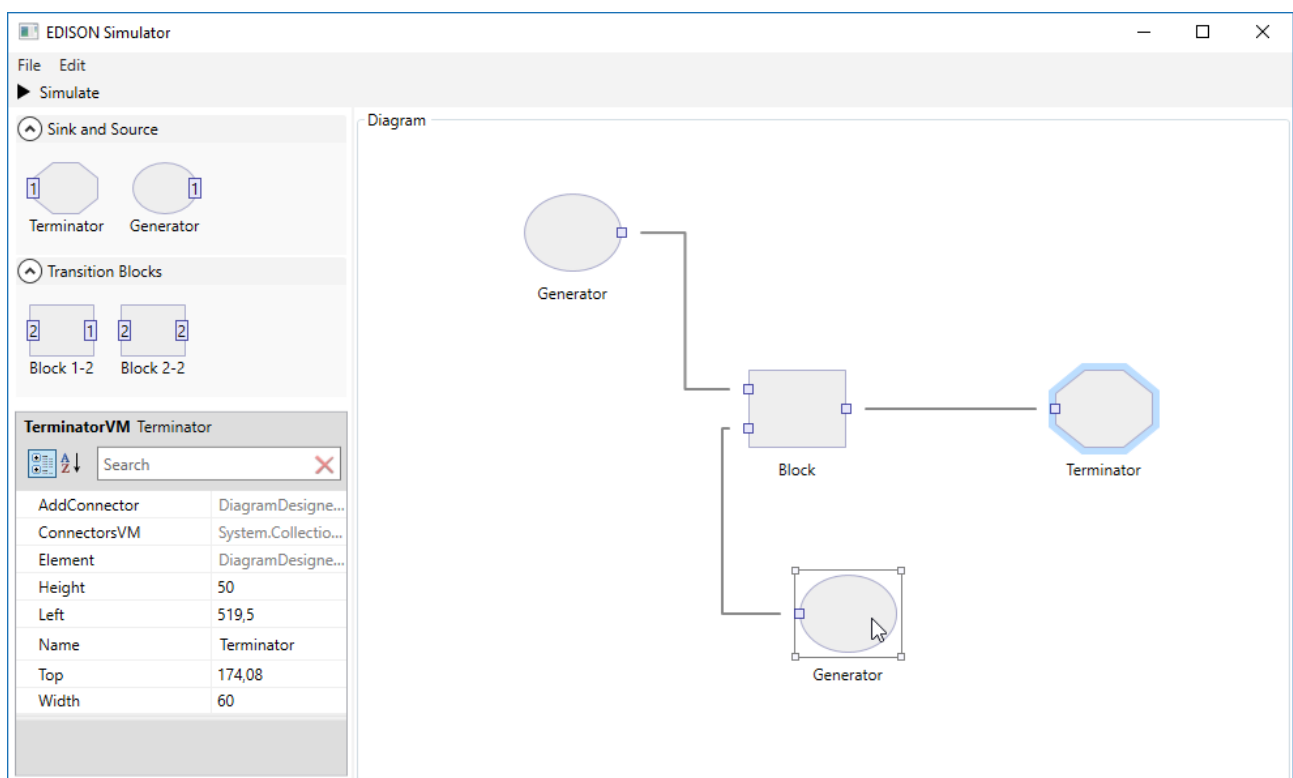


Figure 1: Current look of simulator

References

- [1] WPF Diagram Designer:
<https://www.codeproject.com/Articles/24681/WPF-Diagram-Designer-Part>