*Train Simulation*

Use Case Specification Document

**Case Id 5**

**Update Graph**

Version No. 2.0.0

Project Document Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Version Number** | **Date** | **Revision Author** | **Description of Revision** |
| 1.0.0 | 3/12/19 | Maxx Achtman | Maxx Achtman completed:  1.) Introduction  2.) Use Case Information  3.) Trigger  4.) Preconditions  5.) Postconditions  6.) Use Case Swimlane (Activity) Diagram  7.) Main/Basic Flow(s) of Events (Happy Path)  8.) Alternate/Exception Flow of Events  9.) Assumptions/Business Rules including Non-Functional Requirements |
| 2.0.0 | 4/18/2019 | Zaid Alsafi | Revising graph so it won't be a main functionality in the program but more of it being a additional functionality |

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# 

# 1. Introduction

Update graph allows the Simulation System ~~(name pending)~~ to change what currently exists in ~~our~~  the graph after initial setup when requested to view. ~~Once the first simulation is ran, user would have the option to do the following such as add tracks, hubs, and stations.~~  Once all options are completed, the graph would then be updated and ready for the user to view ~~next simulation.~~

# 2. Use Case Information

## 2.1 Actors

|  |  |  |
| --- | --- | --- |
| Actor Name | Role | Description |
| Simulation System | Main | Read files and update a logical perspective of the graph according to data that is read through provided files |
| UI System | Main | Read files and update a visual perspective of the graph according to data that is read through provided files |

## 2.2 Use Case Interaction

A list of predecessors use cases are as follows:

Use Case 1 – Setup initial state: Read through files provided by the user and verify data entered is valid to be placed in the graph

Use Case 2 – Add / Remove Trains: After the initial setup is ran, user would be able to manually edit trains by adding and removing trains. Changes would be shown during duration of a simulation run

Use Case 3 – Edit Railway: After initial setup is ran, user would be able to manually edit railway by adding and removing tracks, hubs, and stations. Changes would be shown with an updates graph

Use Case 4 – Adjust Weather: After initial setup is ran and processed, the user is able to adjust the type of weather and severity. This will be updated in the simulation system to cover for weather pattern scenarios

A list of successors use cases are as follows:

Use Case 6 – Run Simulation: Once all changes are made and graph is updated according to initial Files and user changes the graph will simulate what is occurring.

Use Case 7 – Track Statistics: While the simulation is running, the graph with the Simulation System will feed the Track Statistics use case with what values to store according to what is available in the graph

Use Case 8 – Recommend Changes: Once simulation has ran, user would be shown what changes would improve the total timing of the current simulation run that the graph has produced

Use Case 9- View Statistics: User will be able to view the data from a simulation run provided from the generated graph prior to the current simulation run

Use Case 10 – Rollback Simulation History: User will be able to view any prior simulation from the graph that was generated on that given simulation run

# 3. Trigger

Files must be uploaded to the program for this Use Case to initiate.

# 4. Pre-condition(s)

1. Setup Initial State
2. Run first simulation

# 5. Post-condition(s)

1. ~~Graph gets updated with change in stations~~
2. ~~Graph gets updated with change in hubs~~
3. ~~Graph gets updated with change in tracks~~
4. ~~Graph remains the same as previous simulated run. No changes are made~~
5. Creates Graph when asked to view

# 6. Use Case Swimlane (Activity) Diagram

## 

# 7. Main/Basic Flow(s) of Events (Happy Path)

During graph creation, the graph will recognize where to place a hub

During graph creation, the graph will recognize where to place a station

During graph creation, the graph will recognize where to place a track

# 8. Alternate/Exception Flow of Events

~~Unrecognized change to the graph~~

Too many of stations/hubs/tracks to create a graph

# 9. Assumptions/Business Rules including Non-Functional Requirements

N/A