Uithof tramlijn

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Contents

1 Problem description

The bus connection between the Uithof and Urtecht Central is the most traveled connection in utrecht. Each day thousands of people travel this route creating a continues stream of people that the busses need to transport.

1.1 Problem

A bus connection is not the most efficient way of connecting the Uithof to Utrecht Central. Maintaining and opperating those busses are a major expence. The scope of the connection makes it profitable to invest in more efficient ways of transport.

2 Assumptions

- Personel is never absent.

- Car taffic and the weather do not have influence on the trams in the simulation.

- Trams can always spawn and despawn at P&R

- The pasengers will not cause delay once inside the tram.

- The still existing bus line will not have a effect on the amount of people traveling with the tram.

3   Problem analysis

Too many people

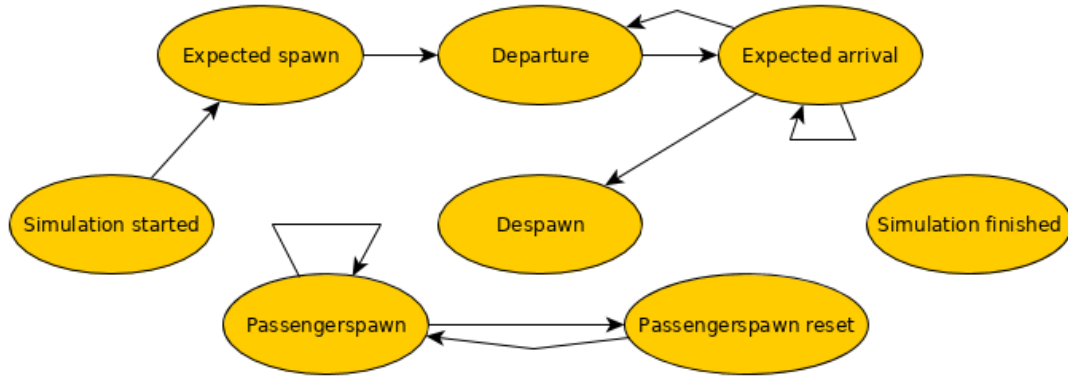# 4 Model explanation

4.1 Events and event handlers

Figure 1: The events in the Uithoflijn simulation model.

4.2 Preformance measures

4.3 State

5 Input analysis

5.1 Modeling of input data from the given data files

5.2 Choise and motivation for applied probability distrobutions

6 Experiments with realistic model: set up and results

7 Results from the artificial input model

8 Conclusion

9 Appendix

Information gained during the interview.

- Each tram has two carriges each having a capacity of 210 people.

- The average dwell time in seconds of a tram is calculated by the following formula:

$$\{d = 12, 5 + 0, 22 peopleIn + 0.13 peopleOut\}. \tag{1}$$

- An alternative model is:

$$\{d = (2.3 * 10^-5) * (peopleTransfer^2) * (peopleIn + peopleOut)\}. \tag{2}$$

- If a tram is occupying a station all trams traveling to that station have to wait.

- Waiting times are generated using the Gama's distribution.

- Trams at head stations have a turnaround time of 40 sec. All other trams at that station will have to wait for the turning tram.

- The minimum departure times between trams leaving the same station is 40 sec.

- Turning a tram around takes 3 min.

- In the morning it is expected that each station gets visited by 4 trams a hour.Later that day this number will be increased to 16 per hour.

- Trams park at P&R