Conceptual Model Translation Tutorial One

In this document the HCCM Conceptual model is translated to the HCCM library in JaamSim.

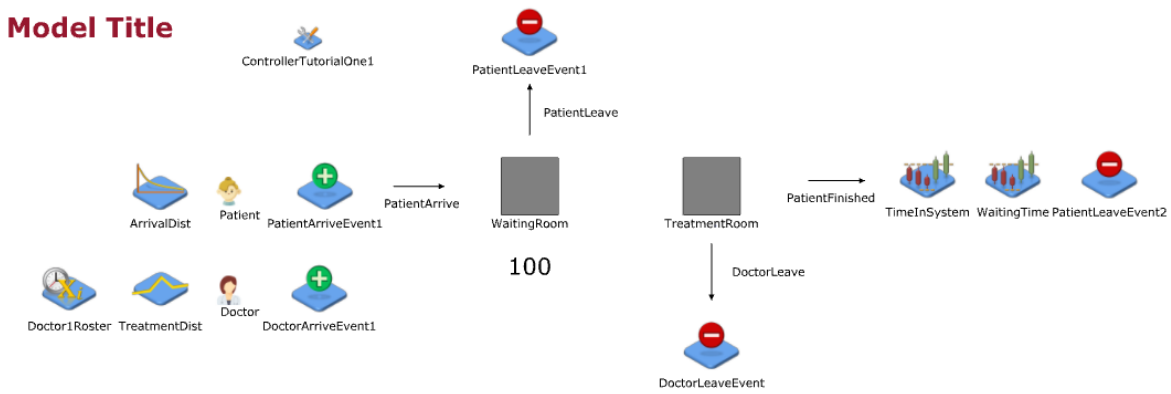


Figure 1 HCCM JaamSim Model Tutorial One

The Jaamsim model of tutorial one is shown in the figure above. When an entity enters a block the controller can be triggered and will check by the Control Policy if an action has to be performed or a new signal has to be sended (to trigger another Control Policy). When an entity leaves a block or ends an activity, the controller can also be triggered. The table with Signals, triggers and actions is shown in table 1. The control policies that are used are shown at the end of this document. Signals are indicated with a rectangle, events are indicated with a circle and decisions are indicated with a diamond.

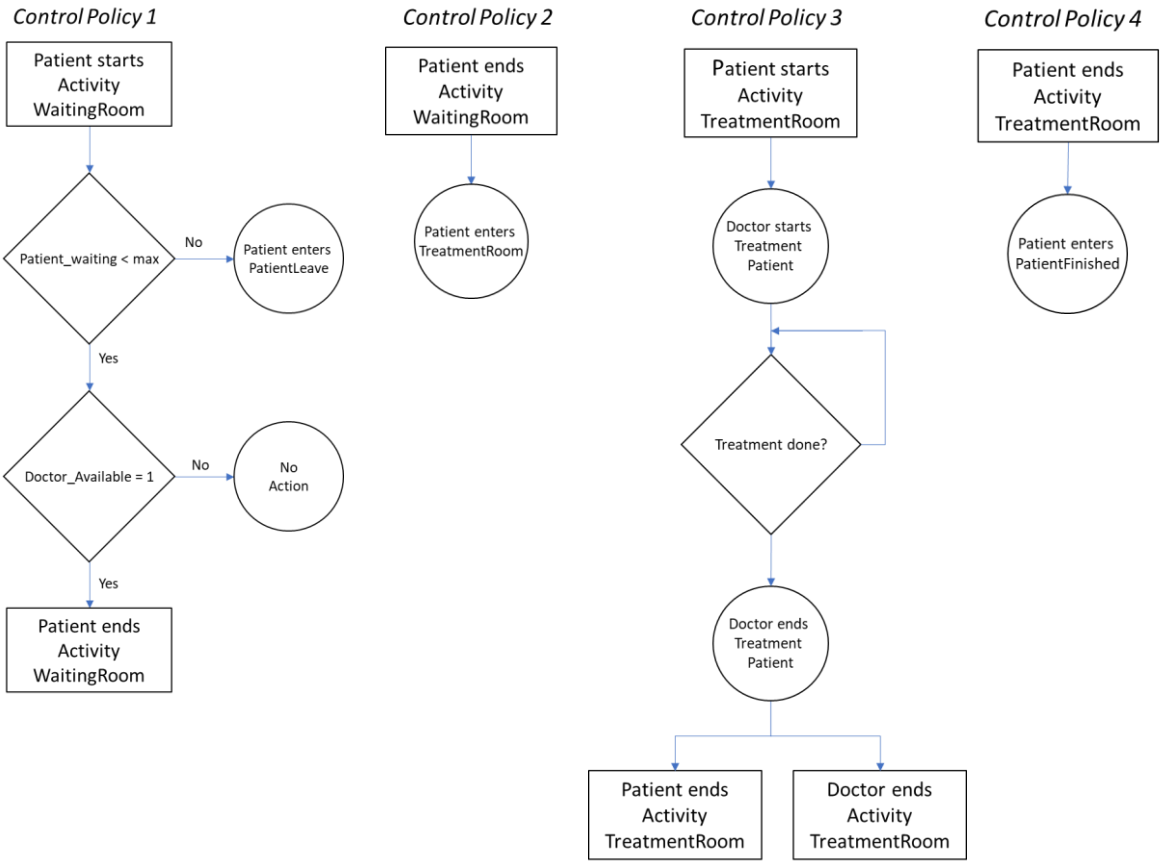
Table 1 Signal Trigger List

Nr.	Signal	Triggered by:	Actions	Triggers:
1.	Patient StartActivity WaitingRoom	Patient enters WaitingRoom	Patient_State = “Wait”	Control Policy 1
2.	Patient EndActivity WaitingRoom	Control Policy 1 Control Policy 5		Control Policy 2
3.	Patient StartActivity TreatmentRoom	Patient enters TreatmentRoom	Doctor_Available = 0 Doctor_State = “Working” Patient_State = “Treat”	Control Policy 3
4.	Patient EndActivity TreatmentRoom	Control Policy 3		Control Policy 4
5.	Doctor StartActivity TreatmentRoom	Doctor enters TreatmentRoom	Doctor_Available = 1 Doctor_State = “Idle”	Control Policy 5
6.	Doctor EndActivity TreatmentRoom	Control Policy 3	Doctor_Available = 0 Doctor_State = “”	Control Policy 6
7.	Doctor ends Shift	TimeSeries		Control Policy 7

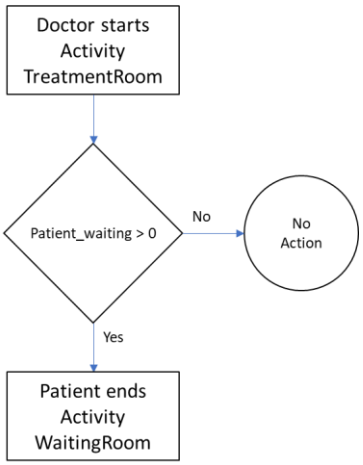
As an example, number 1 of Table 1 will be further elaborated. When a Patient enters the WaitingRoom the signal *"Patient, WaitingRoom, StartActivity"* is send to the controller. The controller checks with the function *"happens"* which actions should be performed by implementing control policy 1. The control policy is coded into java and shown in Figure 2. It can be seen that triggering control policy 1 can result in sending a signal or performing an event.

```
65      public void Controller(DisplayEntity activeEntity, DisplayEntity activity, String state){
66
67          // Patient start Activity at WaitingRoom
68          if (happens(activeEntity, activity, state, "Patient", "WaitingRoom", "StartActivity")) {
69
70              DisplayEntity patient = activeEntity;
71              ((HCCMActiveEntity)patient).setPresentState("Wait");
72
73              // WaitingRoom was full, send Patient to Outside
74              if (((HCCMControlActivity)waitingroom).getNumberInProgress() >= waitingroomcapacity) {
75                  moveEntFromTo(patient,waitingroom,patientleave);
76              }
77
78              // Doctor is available, Patient ends Activity WaitingRoom
79              else if (serverAvailable("Doctor",treatmentroom)) {
80                  sendActivitySignalToList(patient, waitingroom, "EndActivity");
81              }
82          }
```

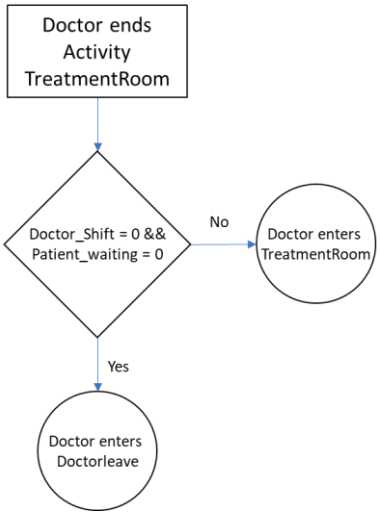
Figure 2 Java code of Control Policy 1



Control Policy 5



Control Policy 6



Control Policy 7