



Parameter										
actions_00										
Id	Stype	Sname	Trigger	Condition	Rtype	Rname	Operation	State	Delay	Time
49	Timers	Runtime	Seconds	595	Gates	Gate W2	Open	1	0	-1
50	Formations	Bus 31-1 08:02:00 - 08:03:00	Departing	1	Gates	Gate M1	Open	0	0	-1
51	Formations	Bus 31-1 08:02:00 - 08:03:00	Departing	1	Gates	Gate M3	Open	0	0	-1
52	Formations	Bus 31-1 08:02:00 - 08:03:00	Departing	1	Gates	Gate M1	Open	1	2000	-1
53	Formations	Bus 31-1 08:02:00 - 08:03:00	Departing	1	Gates	Gate M3	Open	1	2000	-1
54	Timers	Runtime	Seconds	465	Gates	Gate W1	Open	0	0	-1
55	Timers	Runtime	Seconds	465	Gates	Gate W2	Open	0	0	-1
56	Timers	Runtime	Seconds	490	Gates	Gate W1	Open	1	0	-1
57	Timers	Runtime	Seconds	490	Gates	Gate W2	Open	1	0	-1
58	Simulation	Runpass	State	1	Images	Shape11 (Sign05_02)	Show	0	0	-1
59	Hazards	Fire alarm	Active	1	Images	Shape11 (Sign05_02)	Show	1	0	-1
60	Formations	Bus 31-1 08:06:00 - 08:07:00	Departing	1	Gates	Gate M1	Open	0	0	-1
61	Formations	Bus 31-1 08:06:00 - 08:07:00	Departing	1	Gates	Gate M3	Open	0	0	-1
62	Formations	Bus 31-1 08:06:00 - 08:07:00	Departing	1	Gates	Gate M1	Open	0	2000	-1
63	Formations	Bus 31-1 08:06:00 - 08:07:00	Departing	1	Gates	Gate M3	Open	0	2000	-1
64	Gates	Gate M1	State	0	Images	Shape7 (Traffic01_03)	Show	1	0	-1
65	Gates	Gate M1	State	0	Images	Shape6 (Traffic01_04)	Show	1	0	-1
66	Gates	Gate M1	State	1	Images	Shape6 (Traffic01_04)	Show	1	0	-1

SimWalk Technical Highlight #1: Event / Action Handler

The built-in SimWalk Event/Action Handler is a very versatile and powerful feature to influence dynamic pedestrian simulations depending on (random) occurrences of hazards, agents count, vehicle or formation states, simulation time, user actions, and so forth.

Users have the possibility to trigger any action according to incoming events and rule based conditions, for example:

- Manipulate pedestrian walking with traffic lights and barriers controlled by timetables of trains or busses.
- In case of an arson attack in a station, immediately stop arriving trains and evacuate the passengers to the next emergency exits.
- Open emergency exits and disable elevators in case of a fire in a building.
- Count injured persons after a hazard becomes active to mobilize the rescue forces.
- Clock controlled entrances and exits of a shopping center depending on given opening hours.
- Open or close gates and turnstiles depending on passenger count or density.
- Display timer, clock, counter chart, departure monitor, or text panel to provide the customer with actual information.
- Automatically open reserved railway wagons if all others are (nearly) full.
- Start and stop timer on agent's one-shot events 'exited' and 'embarked' to measure and report (e.g. in a chart) the transfer time needed to change the trains.
- Control the 3D camera and make automated snapshots on events of your interest.

- Correlate video capturing with important simulation scenes.
- Show or hide pictures and animations and play sounds for more impressive presentations.

Summary

The SimWalk Event/Action Handler allows to trigger actions during simulation run time based on the interplay of sender objects / events and receiver objects / events. Dynamic events, influencing pedestrian route choice and behaviour during the simulation time, allow to model much more realistic scenarios and generate more accurate results. With the Event/Action Handler, follow-up events of any complexity and scope can be modelled and evaluated.

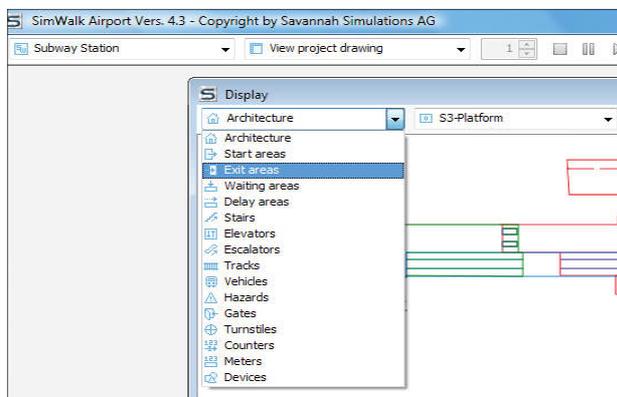




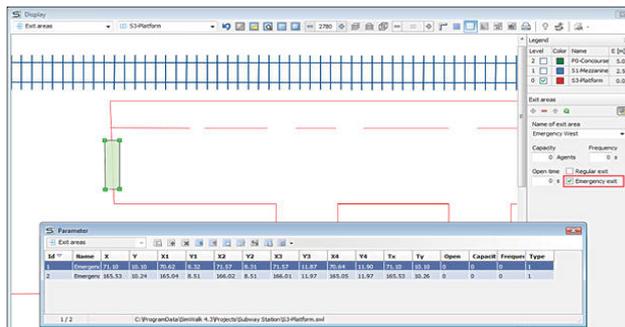
Let's see how we can model the following scenario:

“A terrorist group conducts a bomb attack in a subway station. To inflict the greatest possible damage, a fire bomb detonates exactly when all doors of an arriving train are open and passengers are alighting. Immediately after the detonation, all emergency exits open to evacuate the survivors and let in fresh air and the rescue teams. Twenty seconds after the detonation, the fire alarm system automatically closes all gates to stop the subway access. The customer wants to see a movie of this scenario.”

1. Define the Emergency Exits

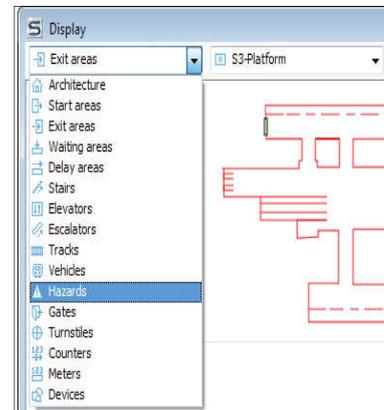


Choosing first the 'View project drawing' command, select the object category 'Exit areas'.

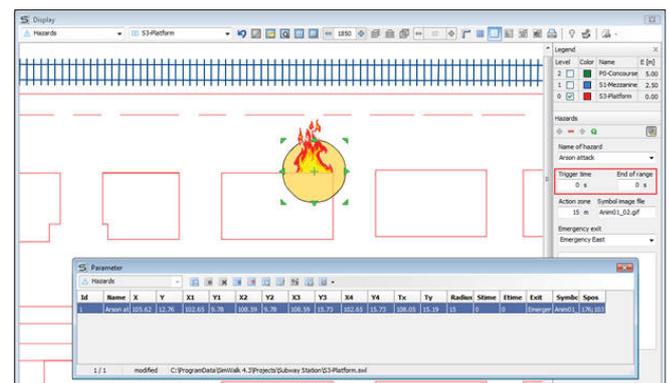


Position all emergency exits in the plan and define meaningful names. Different exits may have the same name in order that passengers choose the closest to their position. **Important:** Set the 'Emergency exit' checkbox.

2. Place a Hazard on the Platform



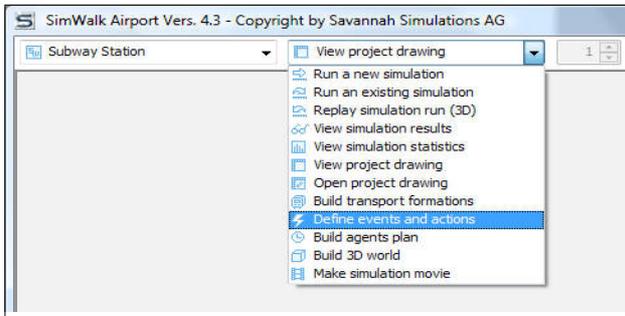
Select the object category 'Hazards'.



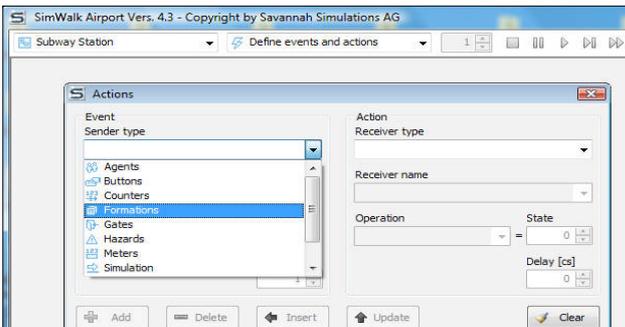
Position a hazard at the location where the bomb explosion occurs and define a meaningful name. Select the emergency exit you have previously defined, set the action radius (zone where people will get injured) and optionally add an image. **Important:** Set the trigger time to 0 seconds to let the Event/Action Handler control the timing.



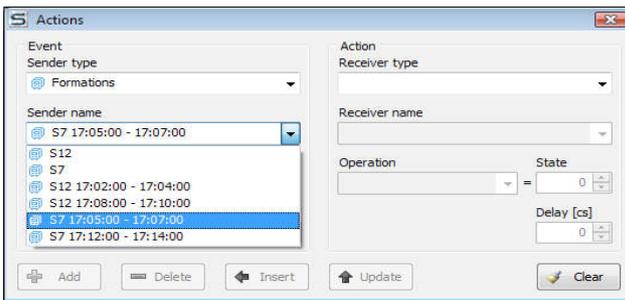
3. Trigger the Hazard when the Train has arrived



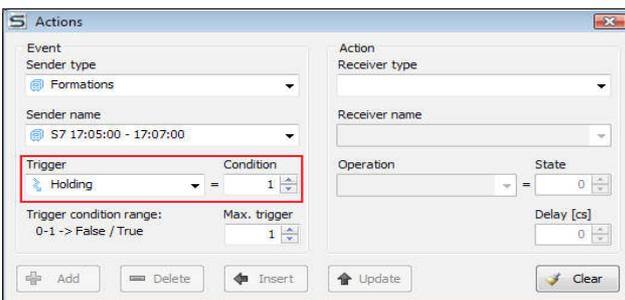
Select the task "Define events and actions".



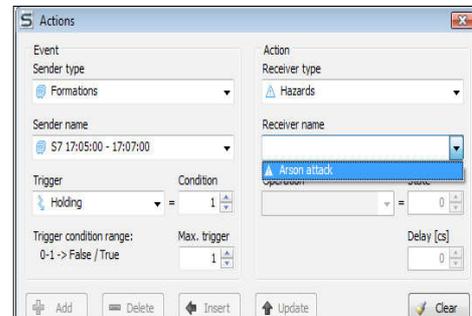
Select the sender type 'Formations'.



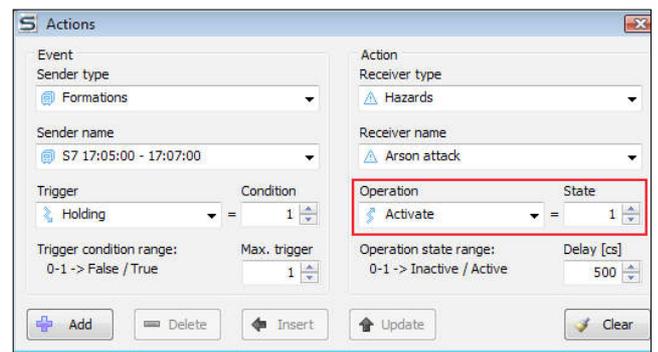
Select the arriving train that triggers the hazard.



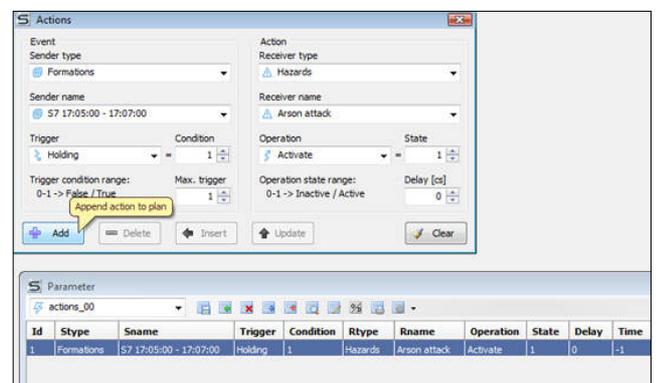
Define the trigger condition 'Holding=1 (True)'. This command means that the event fires when the train has stopped completely and the doors are open.



Select the receiver type 'Hazards' and the hazard you have defined before.



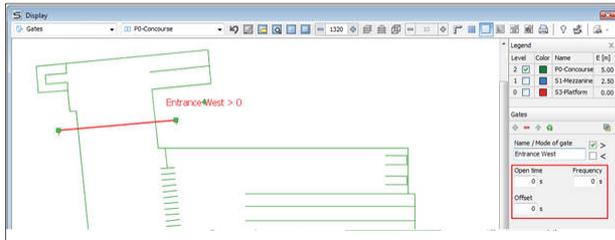
Set the operation state to 'Activate=1 (True)'. This means that the hazard will be activated if the corresponding event has fired, in this case, when the train stops. To wait until passengers start alighting, you can define a delay time of 500 cs (hundredth of a second). This way, it will take 5 seconds until the bomb explodes.



Press the 'Add' button to add the event to the Event/Action Plan. **Important:** Do not forget to 'Save' the plan from time to time.

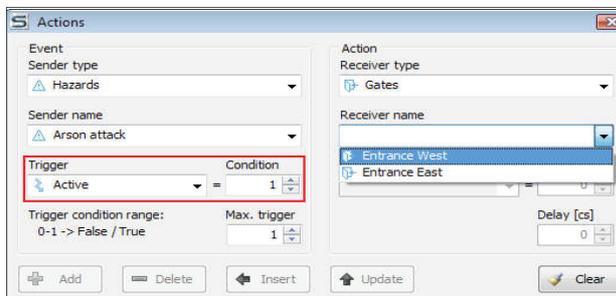


4. Close the Main Subway Entrance 20s after Fire Detection

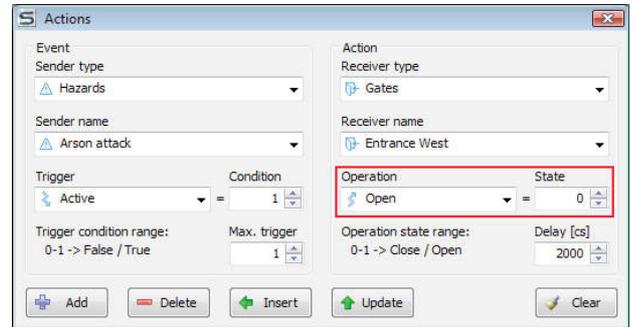


Position one or more gates at the main entrances of the subway and define meaningful names. Ensure that the walking direction is correct. **Important:** Set all timing parameters to 0 seconds to let the Event/Action Handler control the gates states.

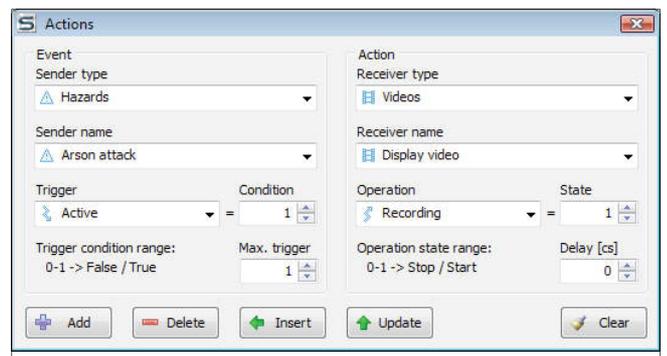
Open the Event/Action Handler again and select your plan ('actions_00').



On the event side, select the hazard 'Arson attack' which will now act as a sender. Set the trigger condition to 'Active=1 (True)'. On the action side, select the receiver type 'Gates'. You will find all the gates in the name list you have previously defined. Select the first gate 'Entrance West'.



Set the operation state 'Open=0 (Close)' and the delay time of 2000 cs (20 seconds). Press the "Add" button to add the event to the plan. Do the same again with all the other gates.



To film the completed scenario, add a new action 'Display video recording=Start'. This will automatically capture video frames after the event 'Arson attack active=True'.

The final Event/Action Plan should look like this:

Id	Stype	Sname	Trigger	Condition	Rtype	Rname	Operation	State	Delay	Time	Tnum	Text
1	Formations	S7:17:05:00-17:07:00	Holding	1	Hazards	Arson attack	Activate	1	500	-1	1	
2	Hazards	Arson attack	Active	1	Gates	Entrance West	Open	0	2000	-1	1	
3	Hazards	Arson attack	Active	1	Gates	Entrance East	Open	0	2000	-1	1	
4	Hazards	Arson attack	Active	1	Videos	Display video	Recording	1	0	-1	1	

Now you are ready to start a simulation and see the Event/Action Handler in action.