SIMULATION OF PEDESTRIAN BEHAVIOUR IN URBAN SPACES,

A Case Study Of "Sidi Gaber" Public Space, Alexandria, Egypt

Pedestrian Behaviour Approach

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Pedestrian Behaviour Approach

The meaning of urban spaces cannot be limited only to the built environment which includes buildings, streets, plazas, trees and platforms, but also extends to people activities that play the important role in urban design.

(Cowan, R.et al 2006; Ellison, 2004).

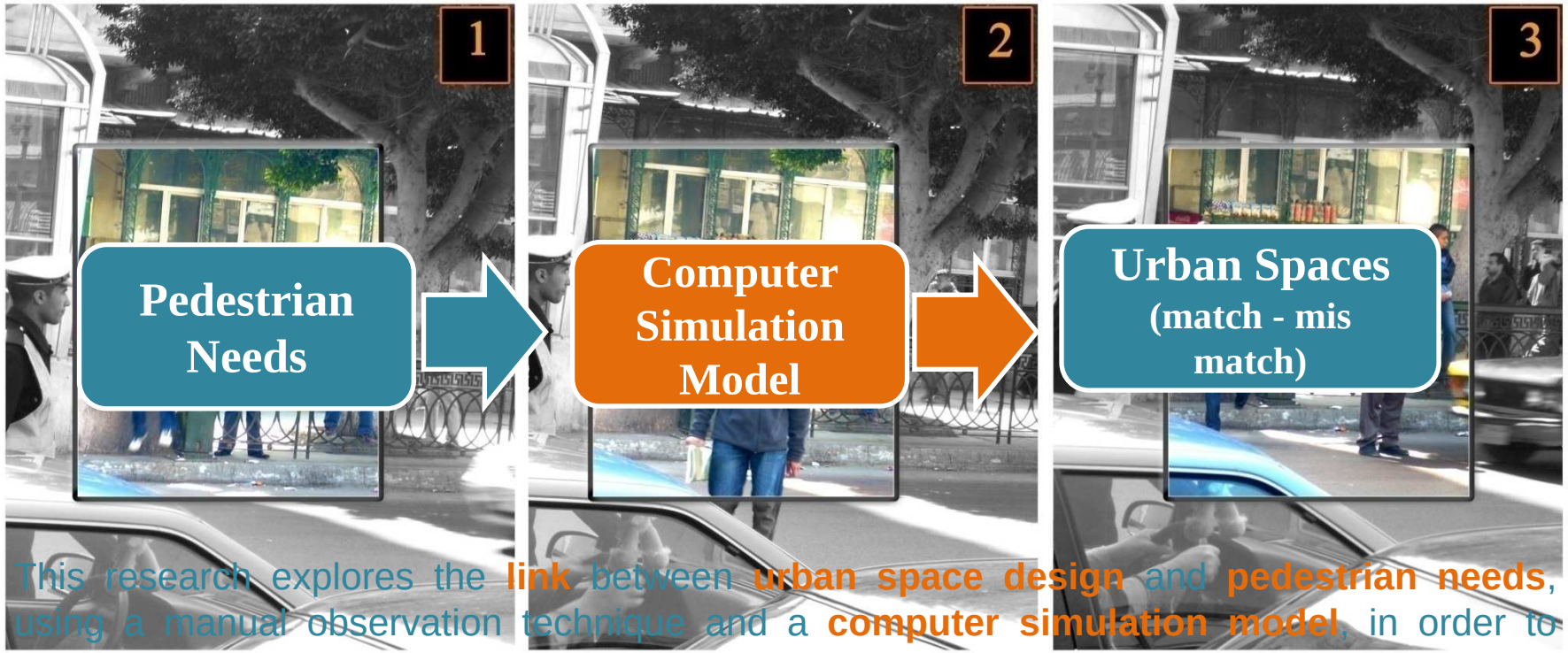
Good urban design is not only about how places look, but actually it is the art of making places for people.

Pedestrian Behaviour Approach

Al- Tahir Square, Cairo, Egypt."25 Jan 2011-12 Feb 2011

In urban spaces people are the **decision makers**, and they are free to choose their next steps. Where spaces are supposed to be designed to meet pedestrians' **needs** and support their activities, most of our urban spaces are not giving pedestrian movements the enough **priority** and that cause a **mis-use** problem.

Pedestrian Behaviour Approach



This research explores the **link** between **urban space design** and **pedestrian needs**, using a manual observation technique and a **computer simulation model**, in order to assess existing situation and future design proposals for pedestrian movement in one of Alexandria open spaces.

The research adopts a **partially automated technique**. A **manual part** consists of direct observations, photographs and videos to analyze the existing situation. While, an **automated part** uses a pedestrian simulator software, **"SIMWALK"**, that generates several alternative scenarios based on possible urban interventions. The program is based on a simplified version of the Social Force Model with the Agent Based Model.

Pedestrian Behaviour Approach

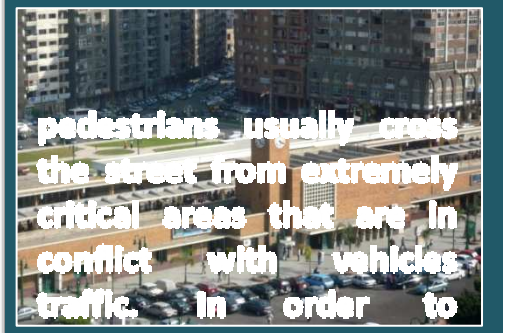
Modeling Elem

1- Agents | **2- Space** | **3- Behaviour**

The case study area (**simulated area**) is located in **Sidi Gaber** railway station, Alexandria, Egypt, which considered as an undefined transitional public space with loss of enclosure. It has several paths and nodes.

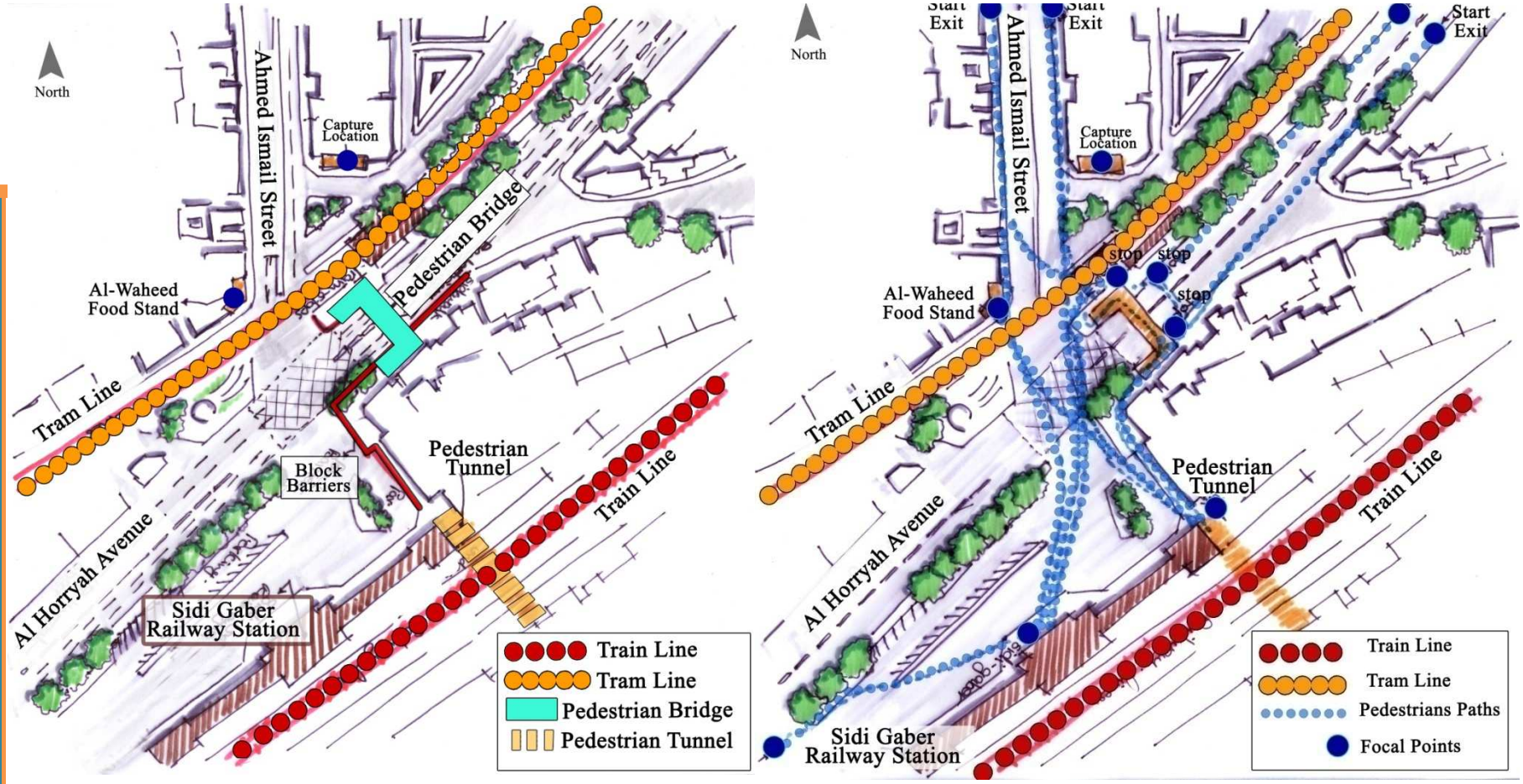
- The position is within the field **boundaries**.
- **No obstacles or walls** are blocking the new step.
- **No obstacles or walls** are within the pedestrians' radius.
- **No other pedestrians** are standing within a range of twice the pedestrians' radius

Pedestrian Behaviour Approach



pedestrians usually cross the street from extremely critical areas that are in conflict with vehicles traffic. In order to eliminate such behaviour, the local authority constructed a pedestrian bridge and escalators that transfers the pedestrian crossing to an upper level.

Pedestrian Behaviour Approach



From the field observations on the selected space there are a number of **pedestrian paths** that have been noticed as pedestrian movement destinations. Within these paths, pedestrians need to cross **"Al-Horreyah Avenue"** in order to arrive to their targets.

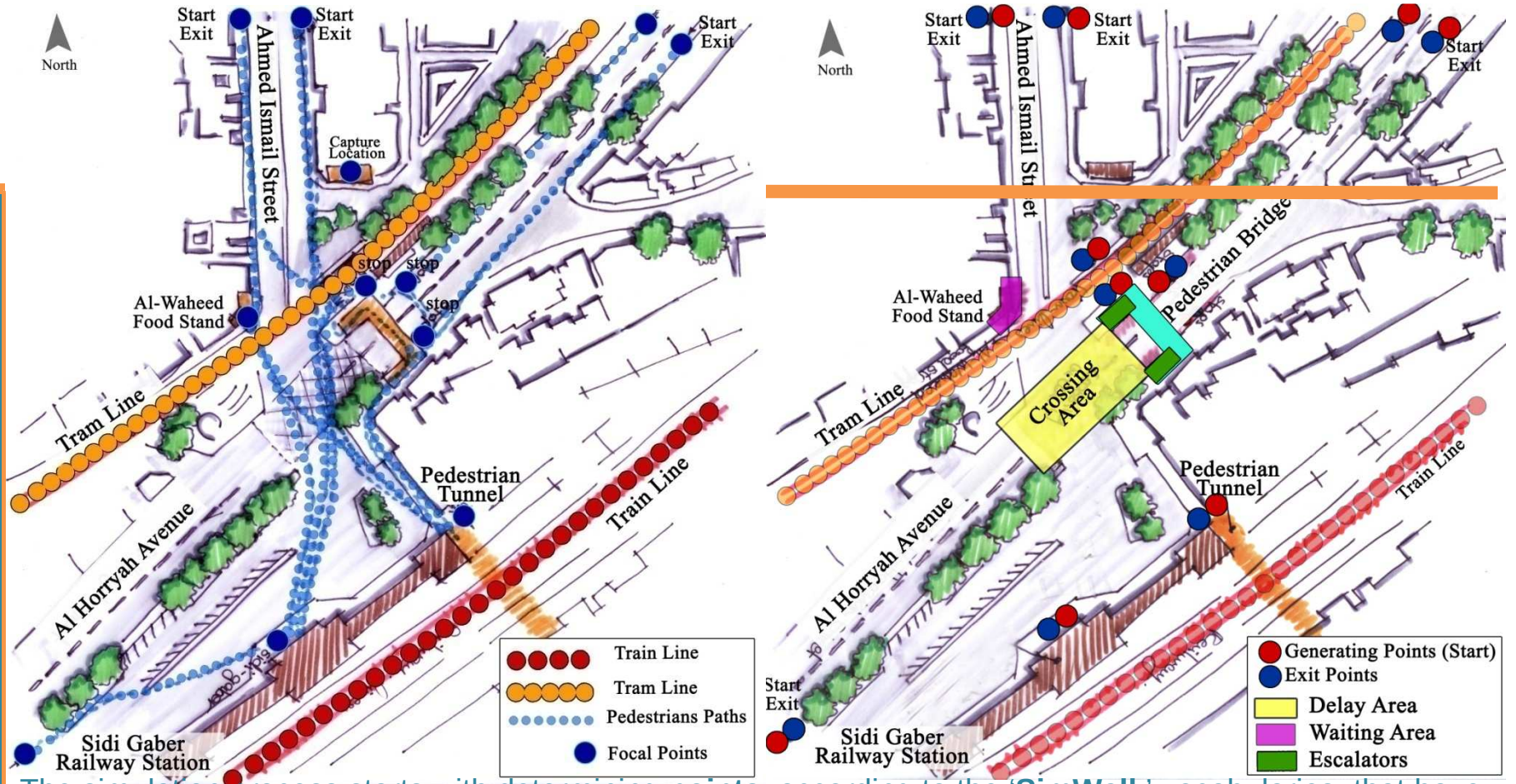
4- Real Situation

Pedestrian Behaviour Approach

Before Before using the pedestrian bridge

After After using the pedestrian bridge as a new movement facility.

Pedestrian Behaviour Approach

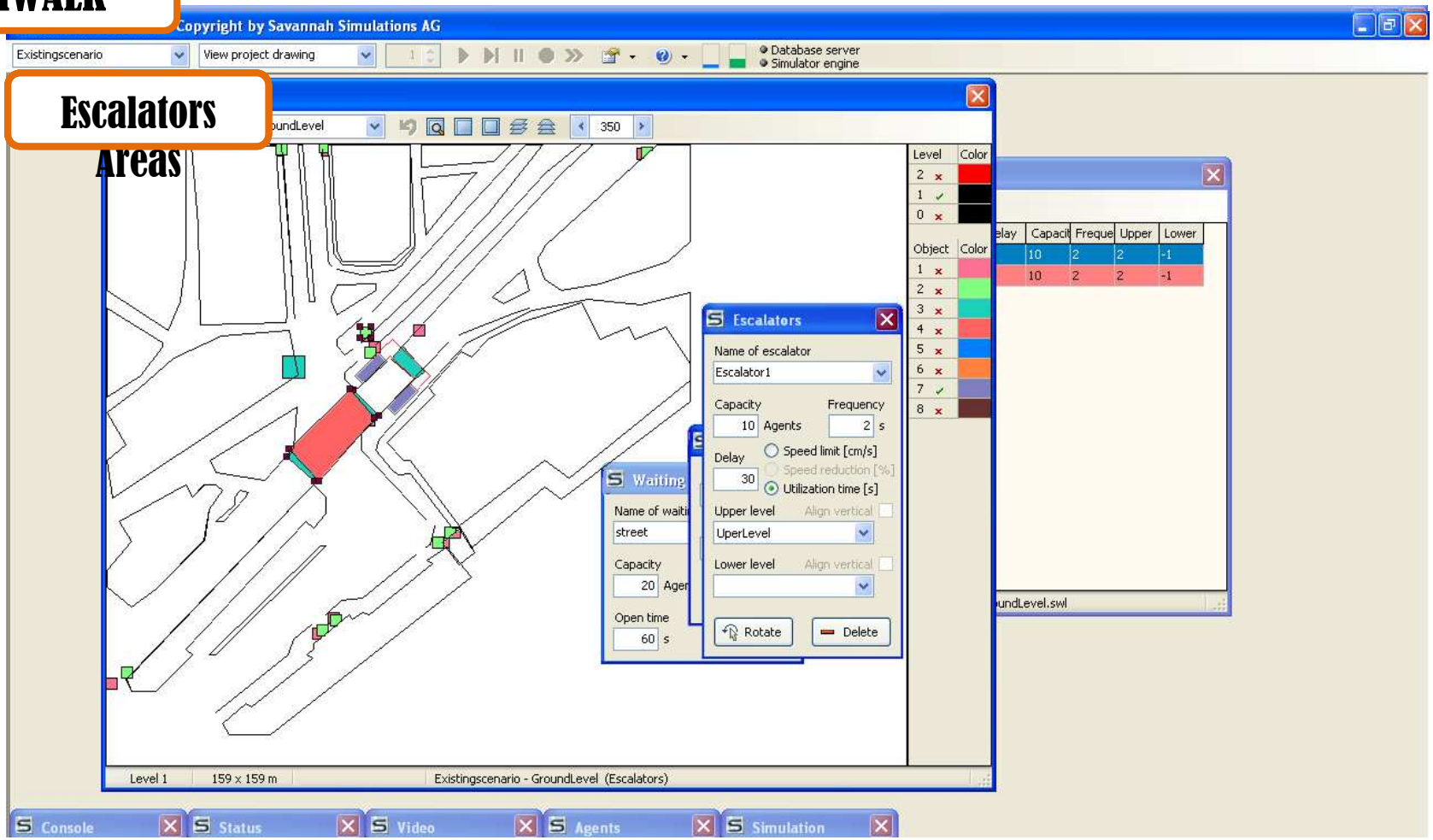


The simulation process starts with determining **points**, according to the '**SimWalk**' vocabularies, that have been applied through manual observations. These points have been analyzed and recognized depending on **pedestrians' paths** that have been observed.

SIMWALK

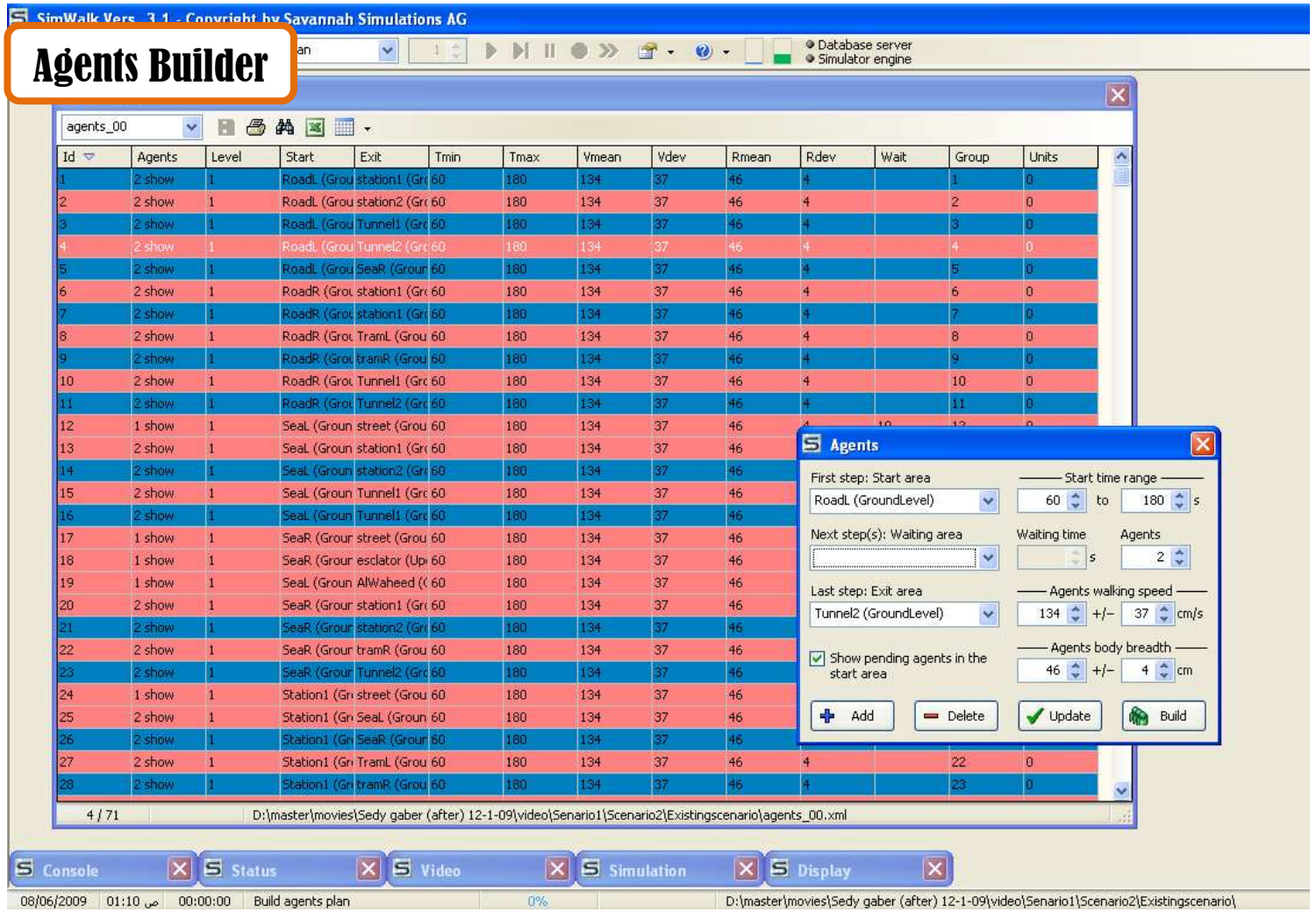
Pedestrian Behaviour Approach

Escalators Areas

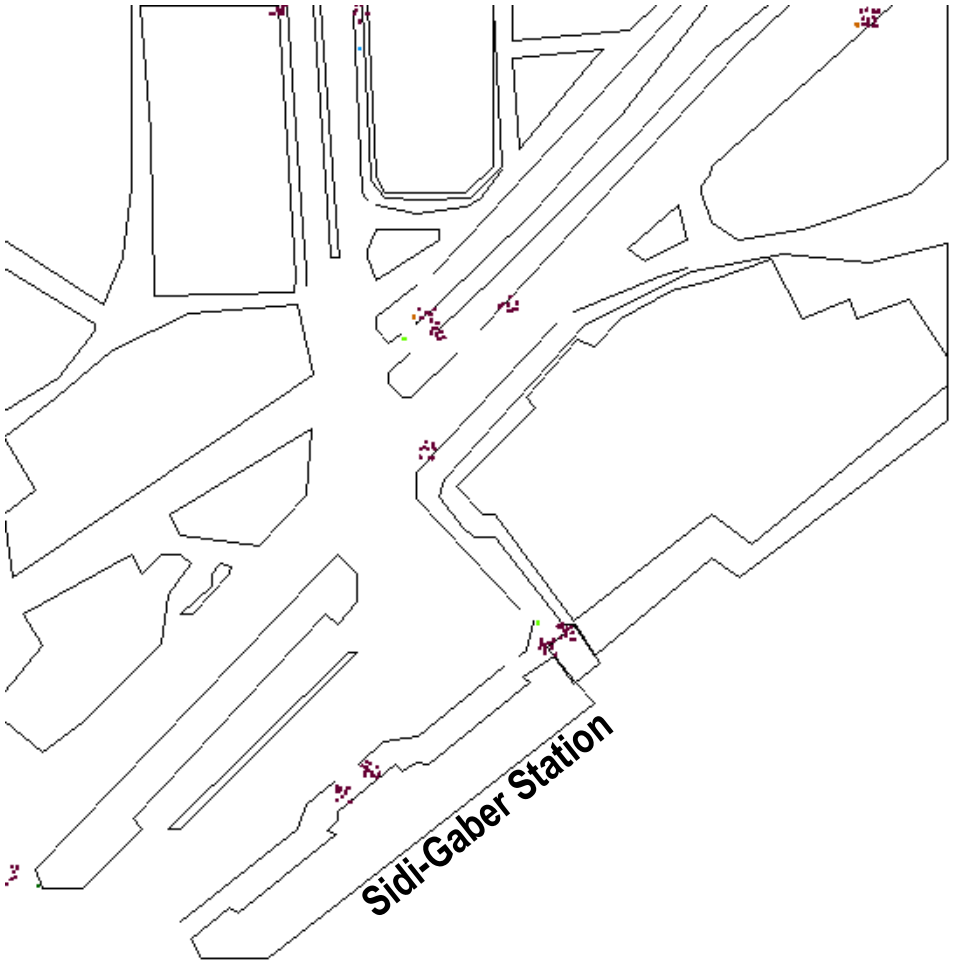


Pedestrian Behaviour Approach

Agents Builder



Pedestrian Behaviour Approach

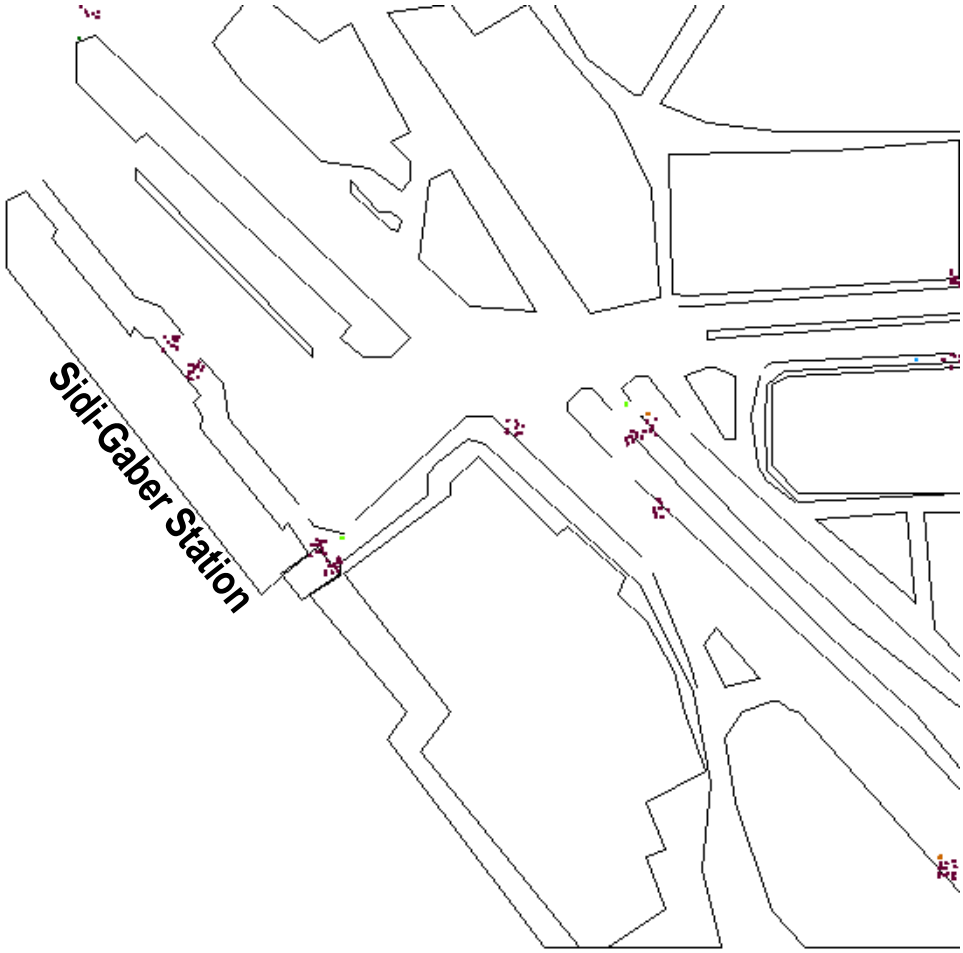


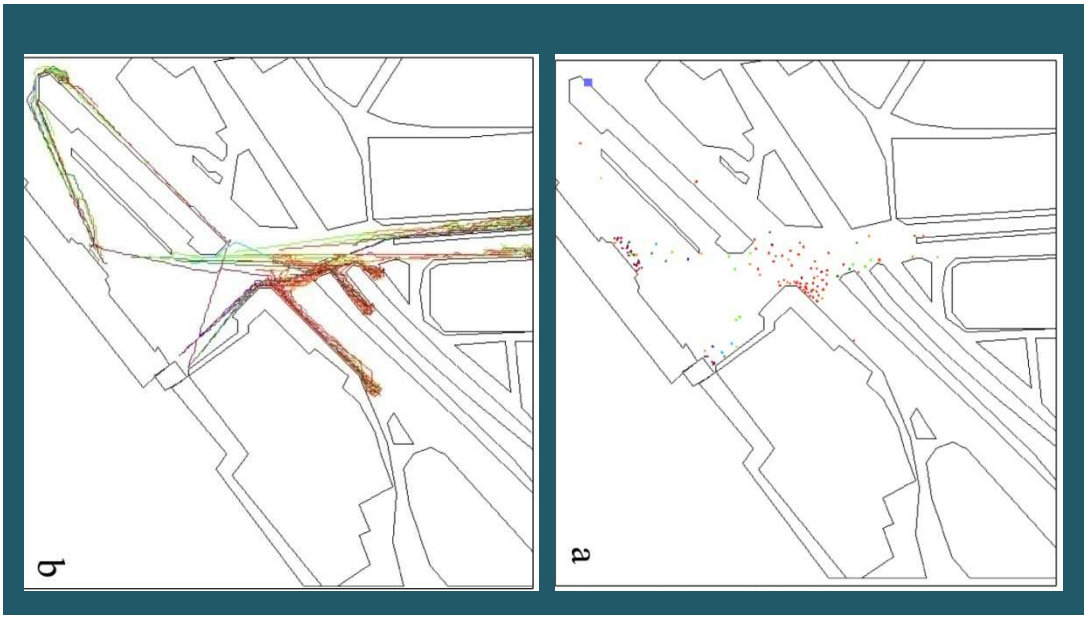
Simulation Behaviour

Through the simulation of the **existing situation**, it has been observed that the pedestrians could **hardly** transfer into the upper level of the pedestrian bridge using the escalators.

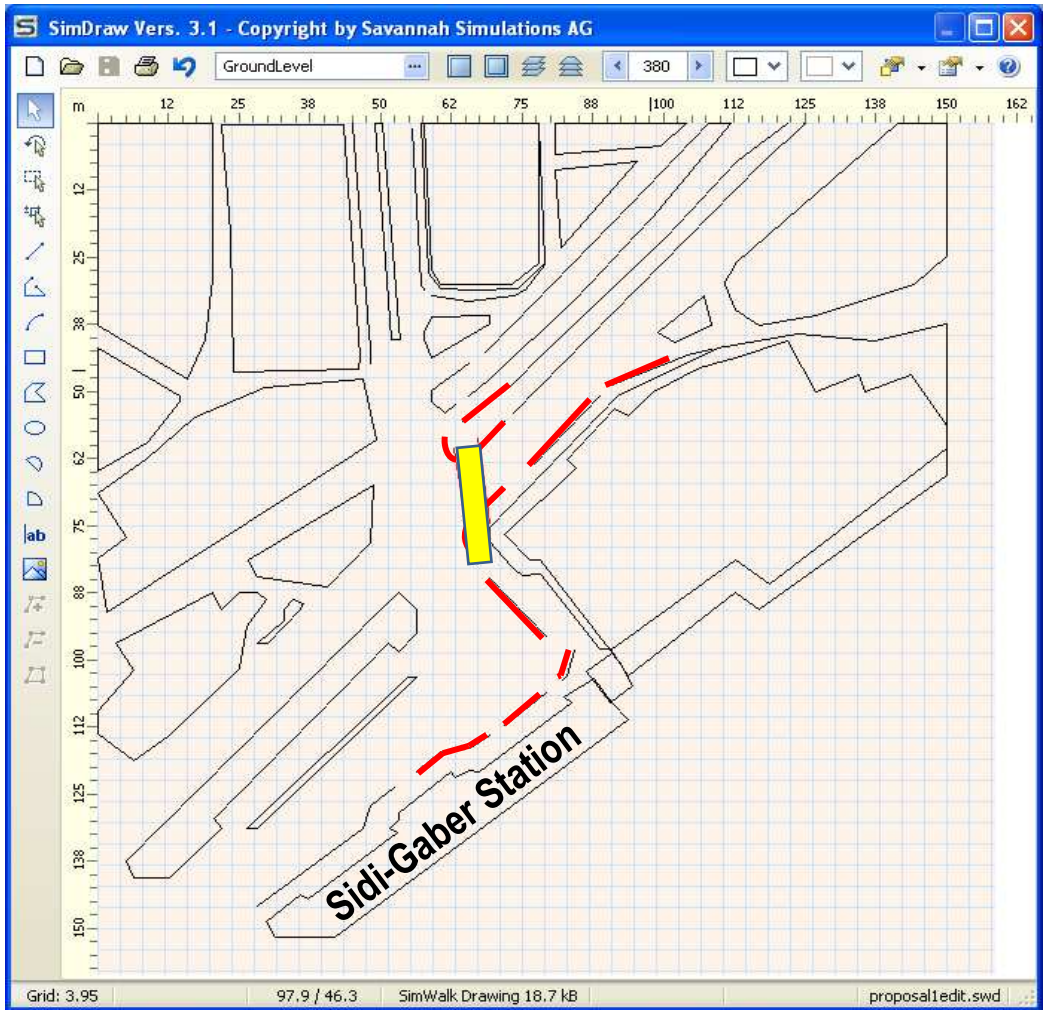
That might be because of the existing **location** of the bridge that does not fit on the pedestrians' destinations **direction**, although it has been tried to **attract** agents to change their level through **waiting area** located on the upper level and has been put in their path through the agents' builder.

Pedestrian Behaviour Approach





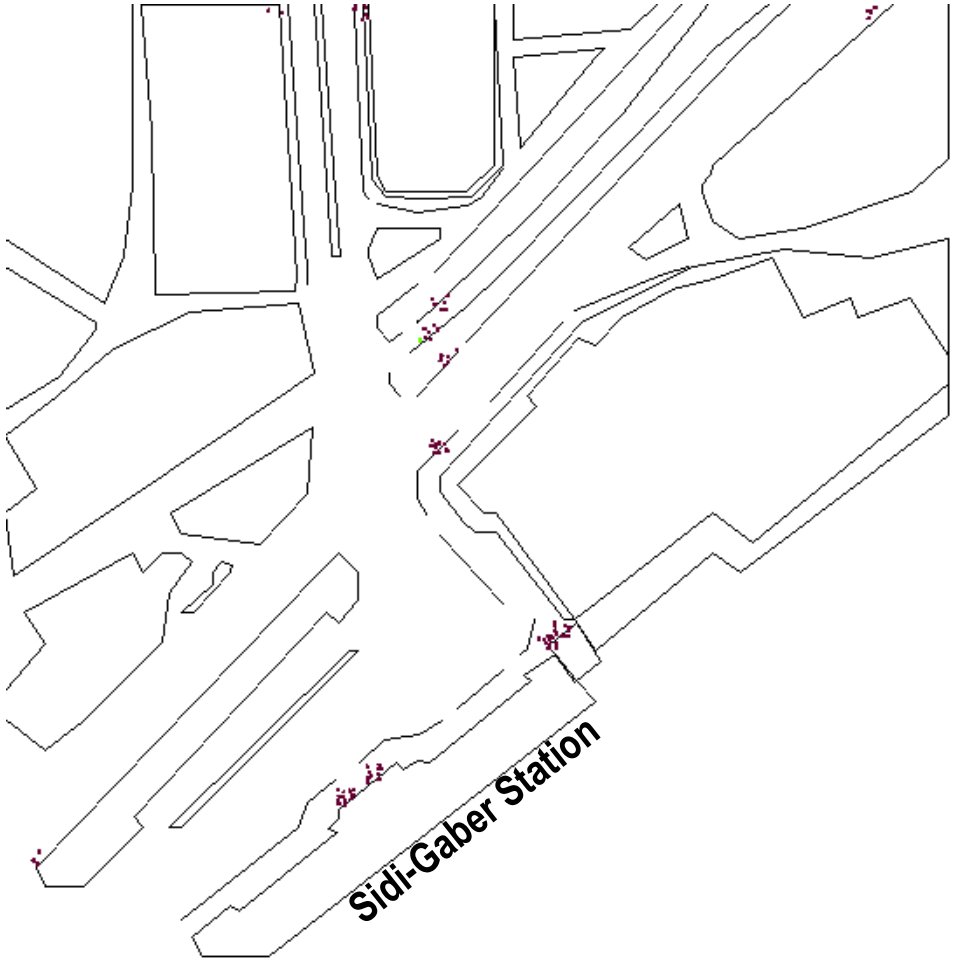
Pedestrian Behaviour Approach



Simulation Behaviour

As a trial, it has been tried to change the bridge **location and** re-asses the sidewalks' **barriers** to give pedestrians more chances for using the bridge **virtually,** through the SimWalk software, that could be more possible to be used by agents through their movement.

Pedestrian Behaviour Approach



Simulation Behaviour

The result was that the **agents** really used the bridge with its' new location, and this could be as a **proposal scenario** for such space.

Conclusion

Pedestrian Behaviour Approach

While working through this research it has been reached out that most of urban spaces have **successful designs**, but lack the **suitable use** from pedestrians.

Here, the results are **partially expected** in advance and fill the gap between urban design and space users to help in solving the **mis-use problem** and make spaces more effective.

THANK YOU

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