

## Bayfront MRT Station Study for Singapore Golden Jubilee (SG50)

August, 2015

*Locale:* Marina Bay, Singapore

*Client:* TÜV Rheinland (service provider)

*Lines:* Circle and Downtown

*End client:* SBS Transit (operator)

*Platforms:* 4

---

### Background

- SBS commissioned TÜV to ensure that Bayfront Station would be ready for SG50.
- 200,000 locals and tourists were expected to watch the show in Padang and Marina Bay:
  - Biggest-ever National Day Parade;
  - 20 fighter jets writing '50' in the sky;
  - Biggest fireworks display in the parade's history; and,
  - Large LED screens around the Marina Bay area showing other celebrations in the city.
- Smooth operation of the station was critical to the event's success.
- TÜV hired LEGION to build, simulate and analyse a SpaceWorks model of anticipated spectator demand moving through the station.

### Objectives

- Verify the operational spectator management plan:
  - Highlight congestion hotspots and bottlenecks impeding passenger movement and
  - Recommend solutions to improve or mitigate problems identified.

### Input

- Architectural CAD plans of the station provided the model environment.
- Existing National Day Party data used to estimate the distributions of passengers using different entrances and exits.
- Demand forecast developed from New Year's Eve 2015 gate line data.

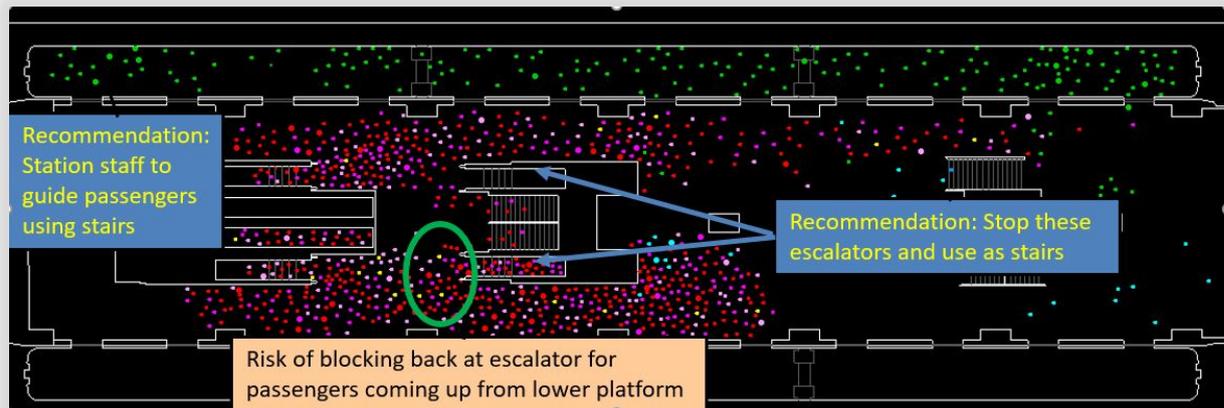
### Output

- Two SG50 models, representing the arrival and departure peaks at the station.



### Arrival Peak Scenario

- Simulation showed that trains arriving on the upper platform would cause severe congestion at the top of the escalator serving this area.
- Recommendation that trained staff guide passengers, so more would take the stairs and some would descend to the lower platform to use the less-used escalator, direct to the concourse.



### Departure Peak Scenario

- The model confirmed that the plan managed the heavy flow of passengers on the concourse, effectively. However, it also showed that many on the lower platform would rush to the closest train doors when trains arrived, making it hard to alight and leading to heavy congestion.
- Recommendation that trained staff guide boarding passengers to walk along the platform to less congested areas, to avoid overcrowding in front of arriving train doors.

### Additional Scenarios

In recognition of the value delivered, further scenarios were requested by the client.

- Alternative escalator configurations were reviewed across a number of models. Those that produced the smoothest flow of passengers were presented to the client, who identified the best option, taking cost, operability, maintainability and other factors into consideration.
- Gate line operations were also assessed, testing 'normal,' 'switched' and 'always open' schemes, to alleviate demand build-ups. The results showed that gates should remain open throughout the event, to prevent potentially dangerous gridlock occurring at escalators.

