

Parallel Session 7 – Safety & Security



Simulating Passenger Evacuation under Fire Emergency in Railway Station using Wifi-Bluetooth Scanners



UIC next station
TEHRAN 2019

Morteza Bagheri

School of Railway Engineering at IUST

Assistant Professor

Introduction

Rail Station Fire



Ten people injured in Saudi high-speed rail station fire in Jeddah (Sept. 2019)
Cairo train station Fire: 20 killed & 40 wounded (Feb. 2019)



Nottingham Central Railway Station (Aug 2018)
Nottingham train station fire caused £5.6m of damage (Jan. 2018)

Video Clip:Woodbine station evacuation 2013



Guidelines

STATION CAPACITY

Emergency Evacuation:

- 1- Train on fire in station.
- 2- Fire within the station structure

Pedestrian planning and modelling exercises is:

- To min any safety risk related to congestion and people movements
- To assess the implications of emergency



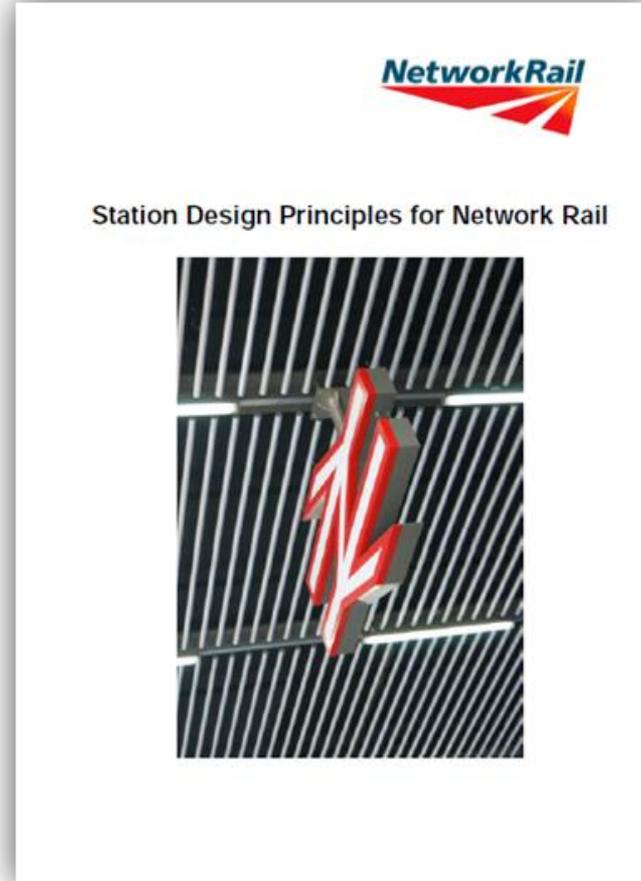
Guidelines

STATION DESIGN

Stations shall provide for the free and safe movement of people

Addressing main hazards:

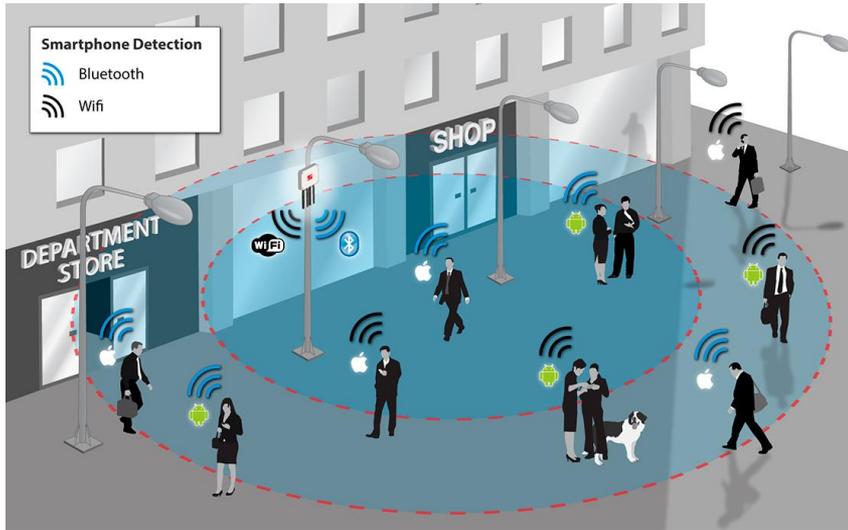
- Congestion within a station in normal or abnormal operating conditions
- The number, size and spacing of entrances, exits and the emergency evacuation



Track & Trace Passengers



Wifi-Bluetooth Scanners

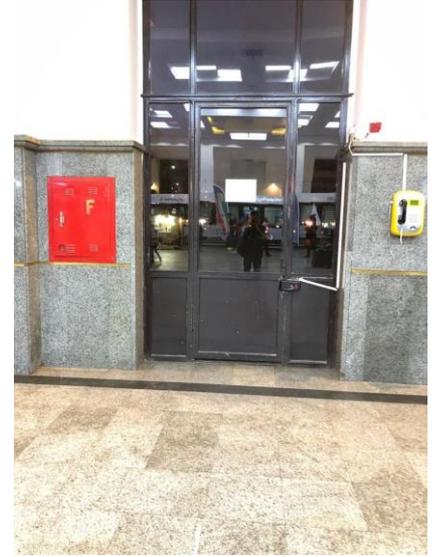




Current Situation

10 min 44 seconds : time for station evacuation

Four min: Max time limit for station evacuation suggested by NFPA130

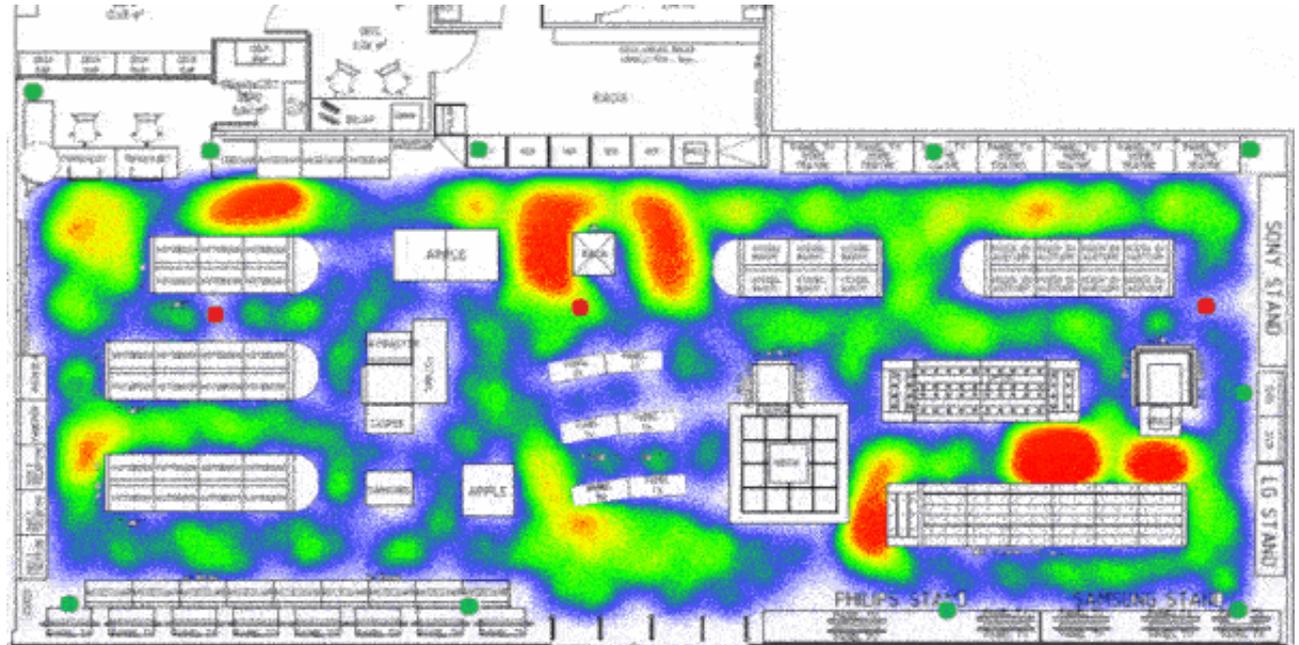


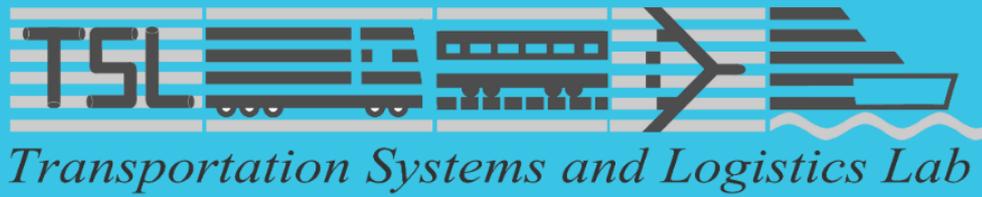
Scenario	Evacuation (min)
Current Sit.	10:44
Removing all gates	11:07
Adding gates	10:39
Add Gate's Width	10:53
Removing all barriers	10:49
Adding exit doors	5:53

Results & Concluions of Simulations

Future Study

Online 24/7/365 Monitoring





<http://tsl.iust.ac.ir/>

Thank you
for your kind attention

Morteza.Bagheri@iust.ac.ir