State Of Palestine
Ministry Of Transport

Training of Trainers Workshop

on Traffic Impact Studies of Commercial Buildings and Facilities in Palestinian Cities.

30 November 2020 – 3 December 2020

Economic and Social Commission for Western Asia

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Overview of Traffic Impact Study Contents

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CONTENT

- Introduction
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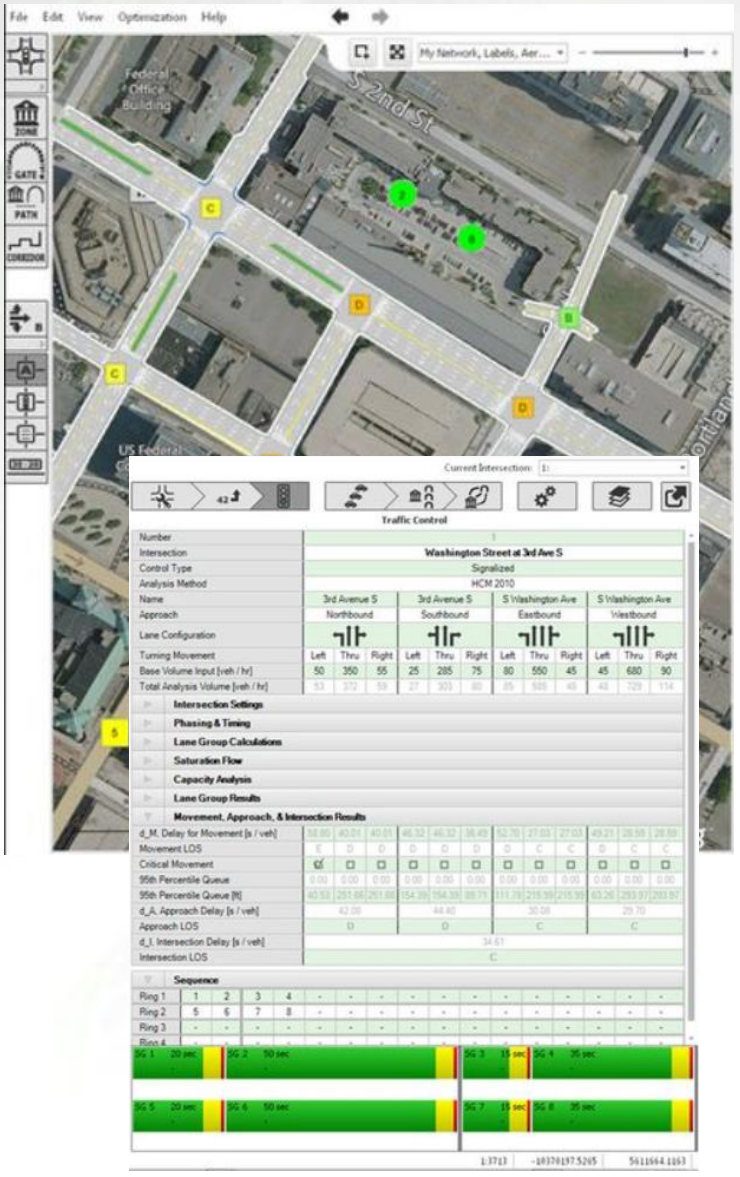
INTRODUCTION

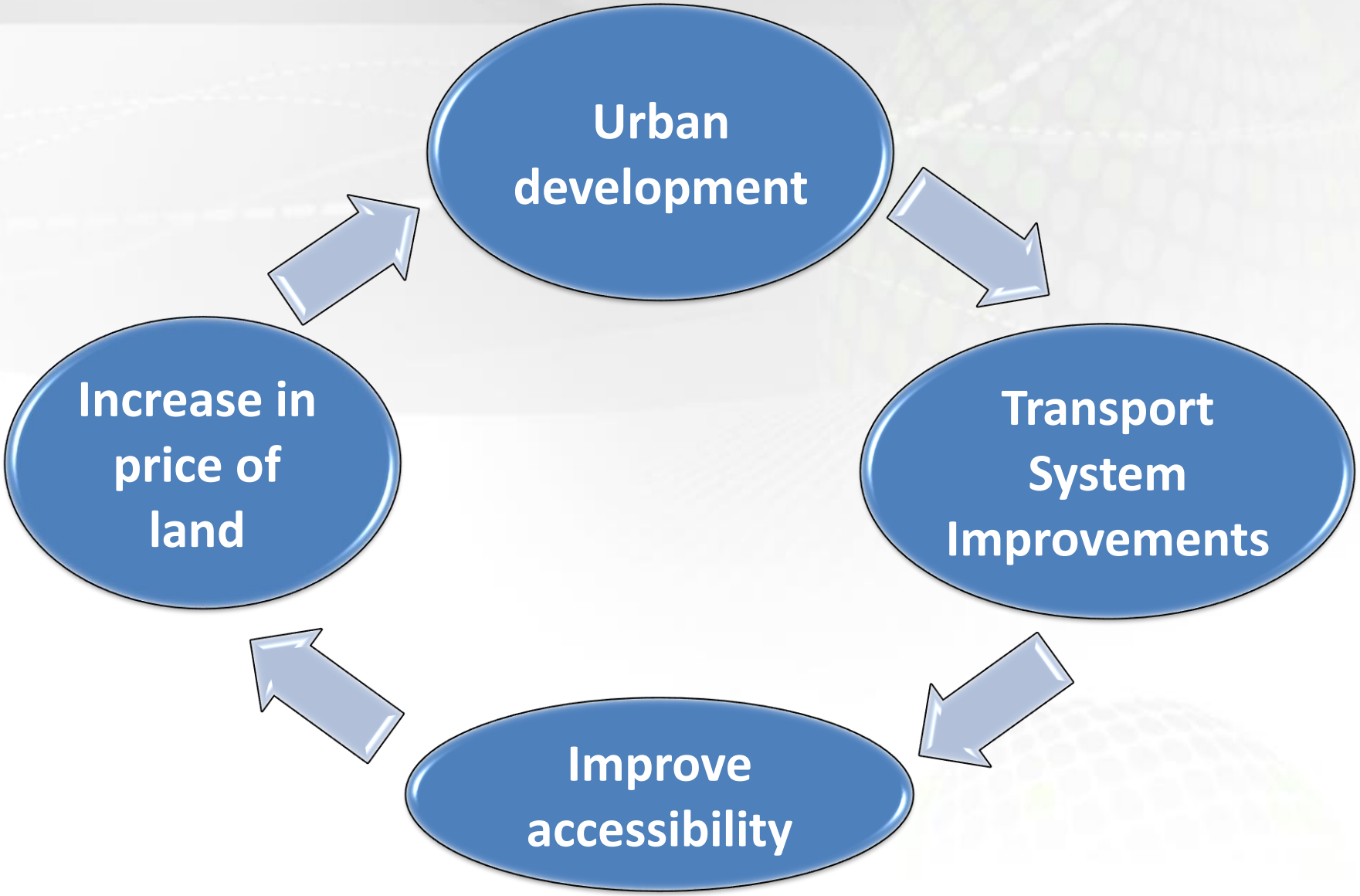
- The aim of a **Traffic Impact Study** or **Traffic Impact Assessment** is to analyse the effect that a particular development could produce on the transportation network.
- Conducted for various developments consisting of residential, business, retail, industrial, offices, commercial and mixed-use developments.



OBJECTIVES

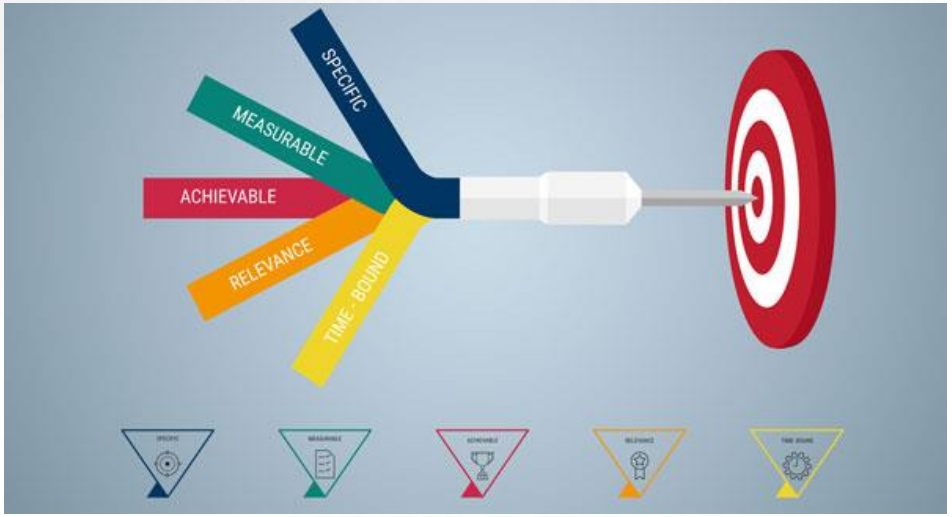
- Determine the necessary improvements to accommodate new development needs
- Assist in land use decision making
- Identify potential problems which could be generated by the proposed development
- Help to ensure safe and reasonable traffic conditions on surrounding streets after the development implementation
- Reduce the negative impacts created by developments
- Protect the substantial community investment in the surroundings
- Recommend necessary geometric or operational improvements

Ex.: interaction between Transport and real-estate



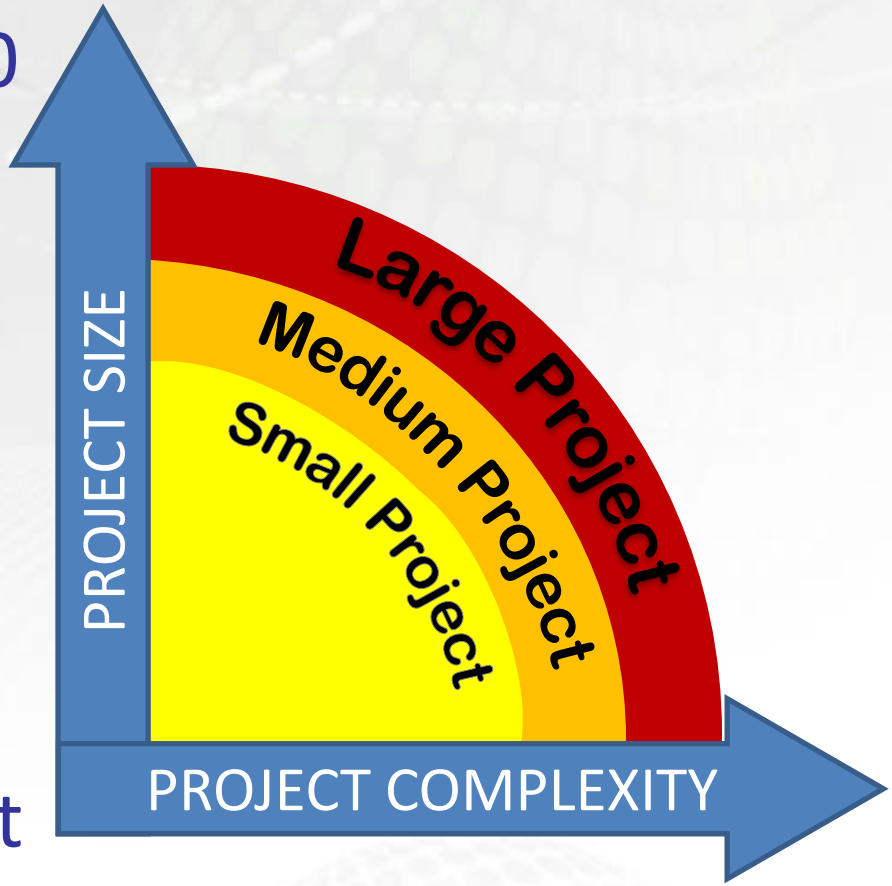
METHODOLOGY

- Assess the adequacy of the existing and future transportation networks and services to accommodate additional trips generated by a proposed development, redevelopment or land zoning and/or reorganisation
- Evaluate the accessibility to the project
- Define the project size
- Define the area of influence
- Assess the current situation
- Forecast additional traffic volumes associated with new development

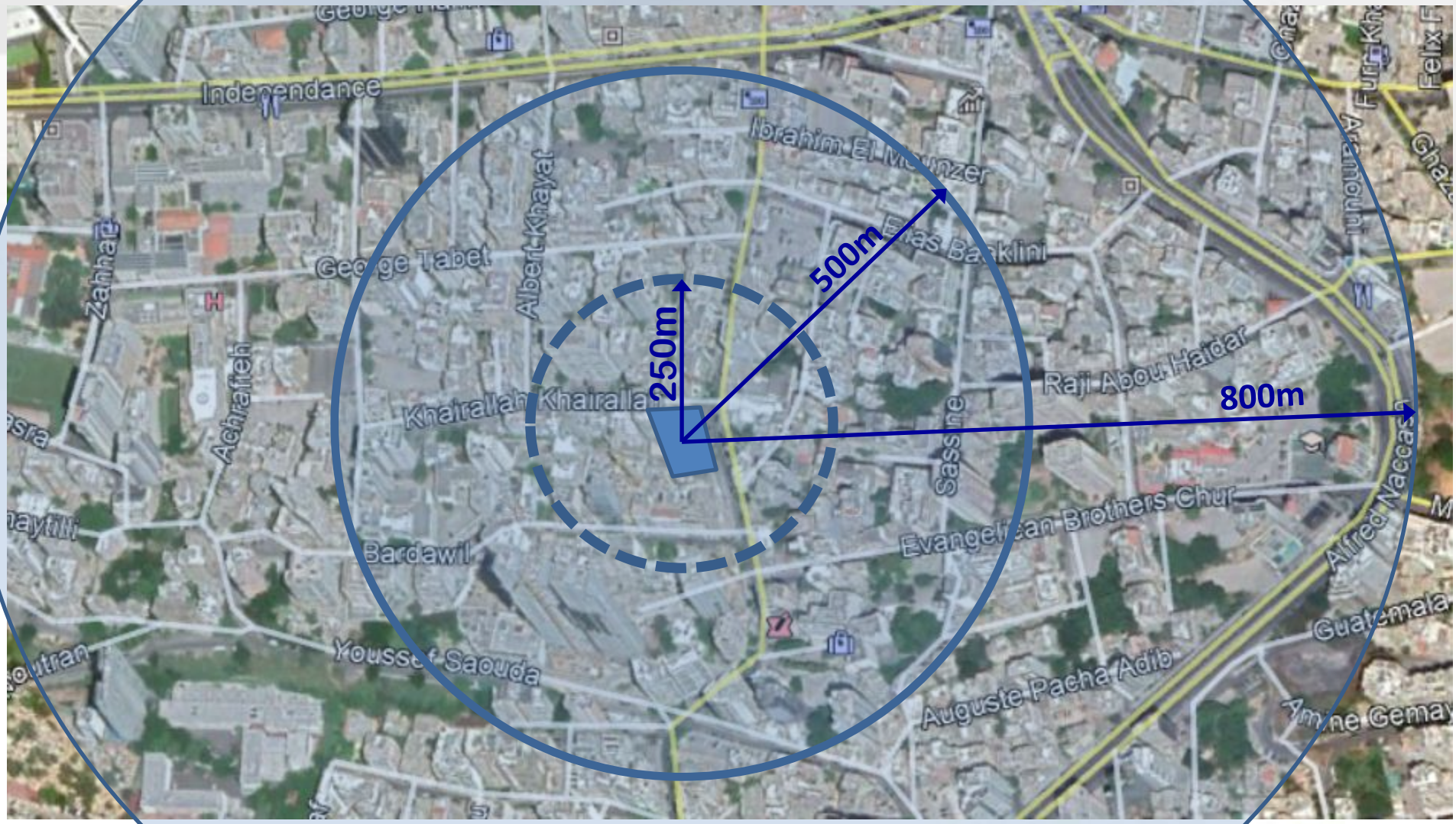


GENERAL CONDITIONS

- Project with more than 50 parking spaces
- Size of the Project
- Forecasts for future horizon
- The authorities requests
- The phasing of the project



- The level of collaboration of the municipalities and relevant authorities


Independance
George Tabet
Albert Khayat
Zahhar
Achrafieh
Khairallah Khairalla
Bardawil
Youssef Saouda
Auguste Pacha Adib
Raji Abou Haidar
Sassine
Evangelican Brothers Chur
Alfred Naccache
250m
500m
800m

STUDY INPUTS

- BUA: the built-up area
- Land use and activities of the development (services, residential, commercial, etc.)
- Preliminary plans for parking levels
- Project accessibility (entry / exit)
- The requested and available parking spaces, identified by activity (different traffic generation ratios)

STUDY INPUTS

- Assessment of the current situation ⇨ Traffic volumes, network characteristics, modal share...
- Ratios in HPM and HPS of flows attracted and generated by type of project activity:
  - ✓ Lebanese law
  - ✓ The law for downtown Beirut
  - ✓ ITE: Institute of Transportation Engineers
  - ✓ Dubai Manual, Qatari Manual, Riyadh Manual
  - ✓ etc
- Adaptation of the ratios

STUDY INPUTS

- A general traffic forecast model for the city (or the territory)
- Development opening year + future years traffic growth rate
- Macro and/or Micro simulation tool for: Synchro, Visim, ...
  - ✓ Identify the **level of service** of the road network
  - ✓ Identify traffic queues
  - ✓ Regulation of traffic lights at intersections

ASPECTS TO BE ANALYSE

The analysis of the roadway and intersections should include the following elements:

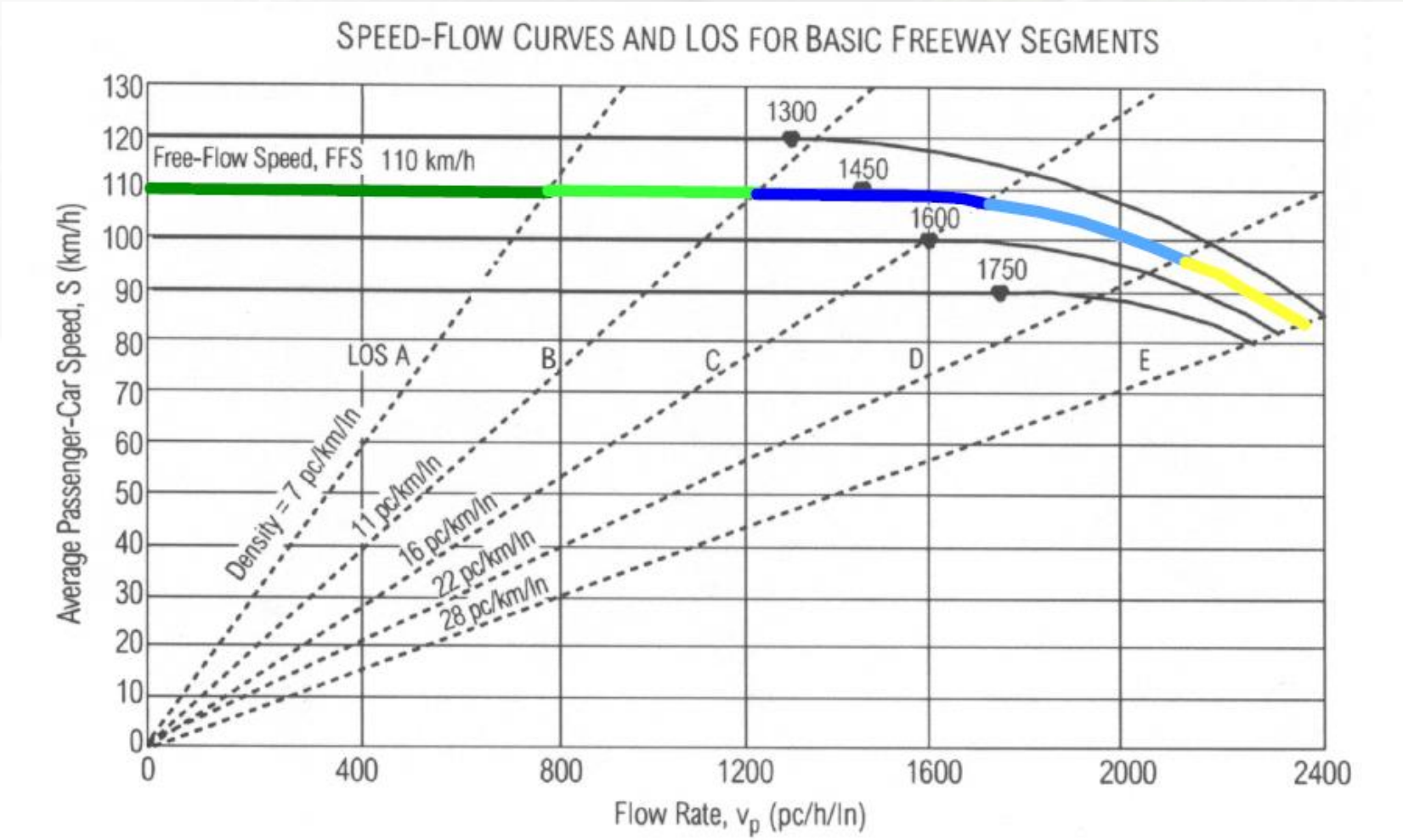
- Site access
- Capacity/LOS analysis
- Queuing analysis
- Traffic safety
- Pedestrian, bicycle, and shared-use path needs
- Speed/time considerations
- Intersection management
- Traffic signal analysis

LEVEL OF SERVICE - HCM

- Six levels: A, B, C, D, E, F
- Level E = capacity operation
- Level F: saturation operation

LOS	Saturation (pcu/km/ln)
A	0-7
B	7-11
C	11-16
D	16-22
E (Capacity)	22-28
F	>28

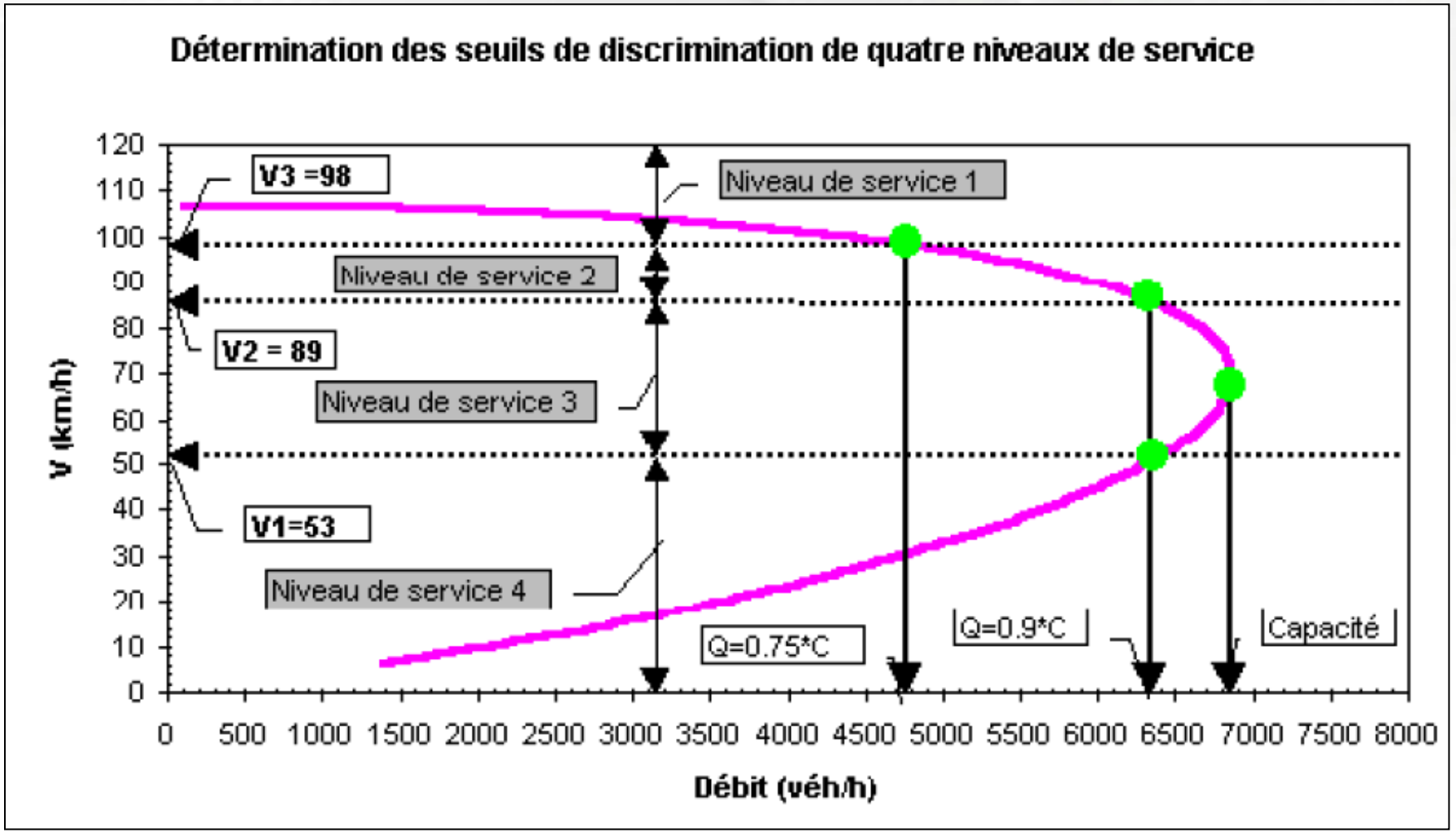
LEVEL OF SERVICE - HCM



LEVEL OF SERVICE - FRANCE

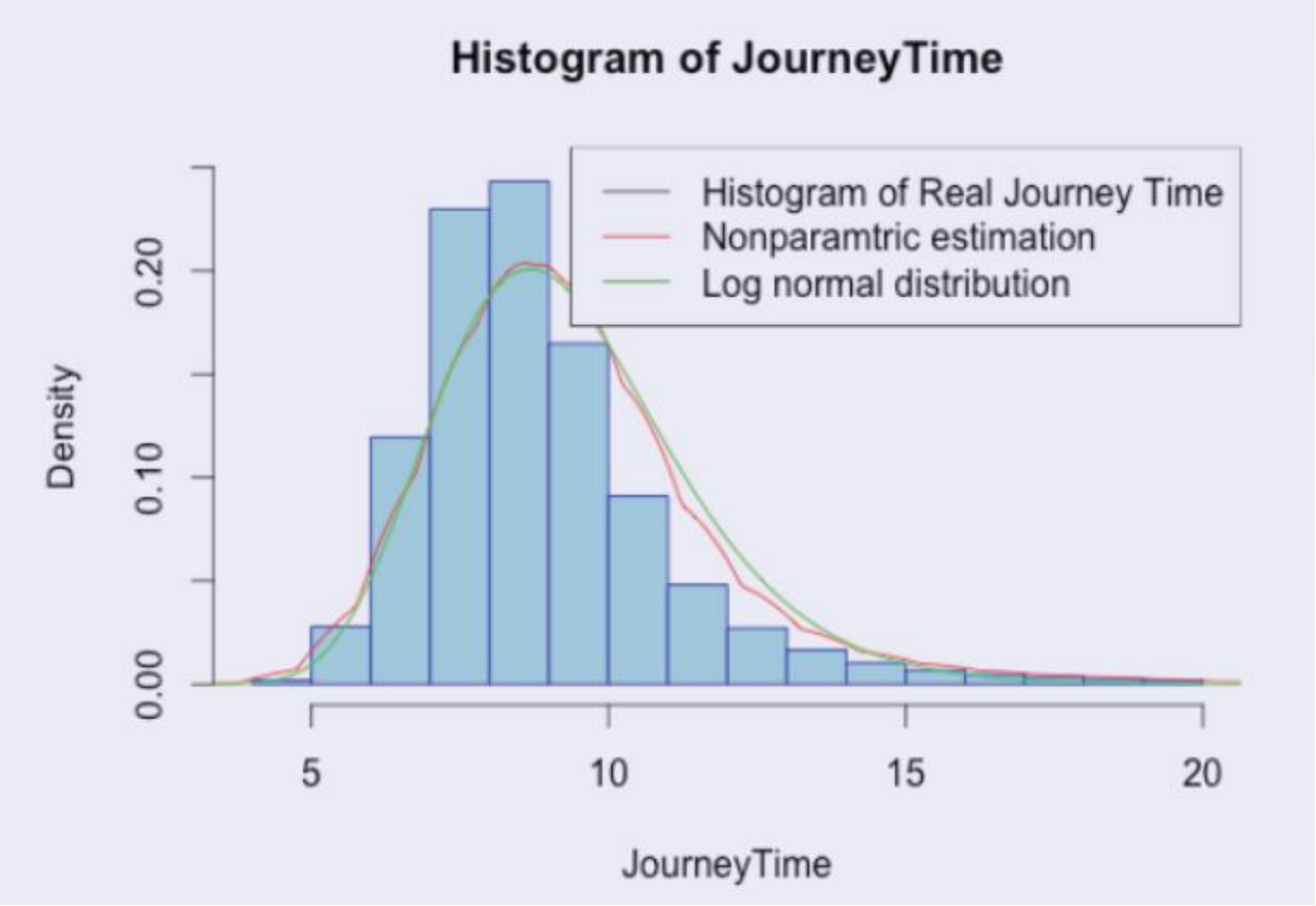
- Four level of service noted by NSC:
  - ✓ NSC 1 = LOS A ⇨ B
  - ✓ NSC 2 = LOS C ⇨ D
  - ✓ NSC 3 = LOS E
  - ✓ NSC 4 = LOS F
- Thresholds: 75% and 90% of the capacity

LEVEL OF SERVICE - FRANCE



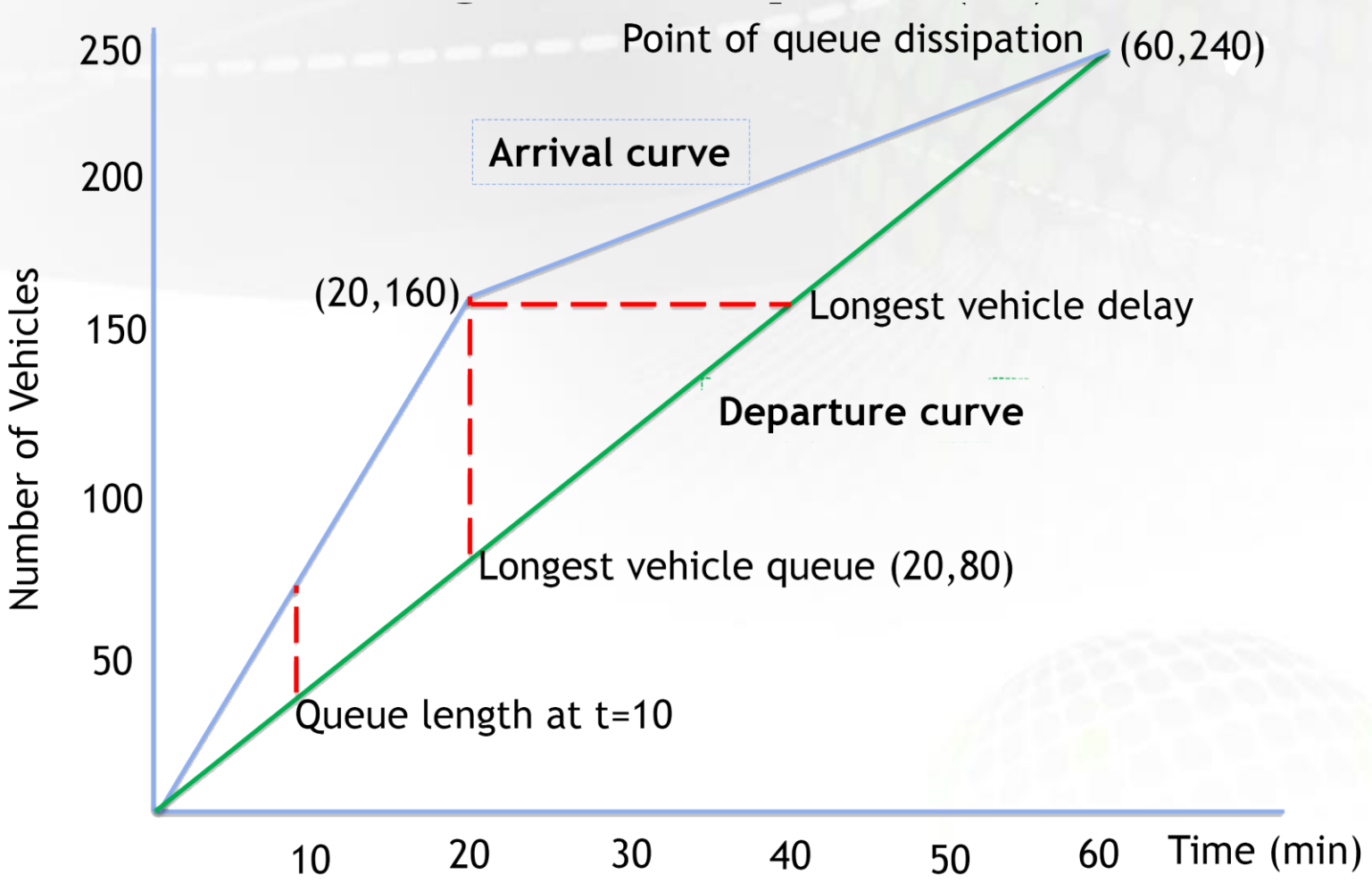
TRAVEL TIME AND AVERAGE SPEED

- The time needed for a trip from its origin to its destination
- Needed for the calibration of a model



TRAFFIC QUEUING

- Traffic queuing occur during congestion periods



TRAFFIC QUEUING

- Queuing theory is a broad field of study of situations that involve lines or queues:
  - ✓ Retail stores
  - ✓ Manufacturing plants
  - ✓ Transportation: traffic lights, toll booths, stop signs, ….

CONCLUSIONS

- Recommendations and measures:
  - ✓ Improve the future situation
  - ✓ Improve the level of service of the surrounding network and intersections
  - ✓ Provide road safety for vehicles entering and exiting the project

CONCLUSIONS

- Limitations of modelling process
  - ✓ Some elements are not taken into consideration:
    - type of vehicle,
    - vehicles in the opposite direction
    - stops
    - dense and saturated systems
    - speed fluctuations
- Initial TIS should be performed at the concept level of the project; and to be detailed at further stages

Thank You / شكراً