



Ministry of Transportation



**Jerusalem  
Transportation  
Masterplan Team**



CIVITAS FORUM 2013

# Integration of Transport and Urban Planning The Case of the Jerusalem Light Rail



**“A picture is worth a thousand words...”**

*Jaffa St. – the heart of the Jerusalem CBD - early 1990's*



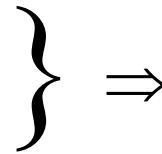
*20 years later...*





# Jerusalem at a Glance – Demographics

- ▶ Population: 800,000
- ▶ 3 main sectors:
  - Jewish (40%)
  - Ultra-orthodox Jews (25%)
  - Arab (35%)
- ▶ Sectors differ by
  - Household/family size
  - Travel behavior
  - Car-related attributes:  
driver's license, car availability, etc.



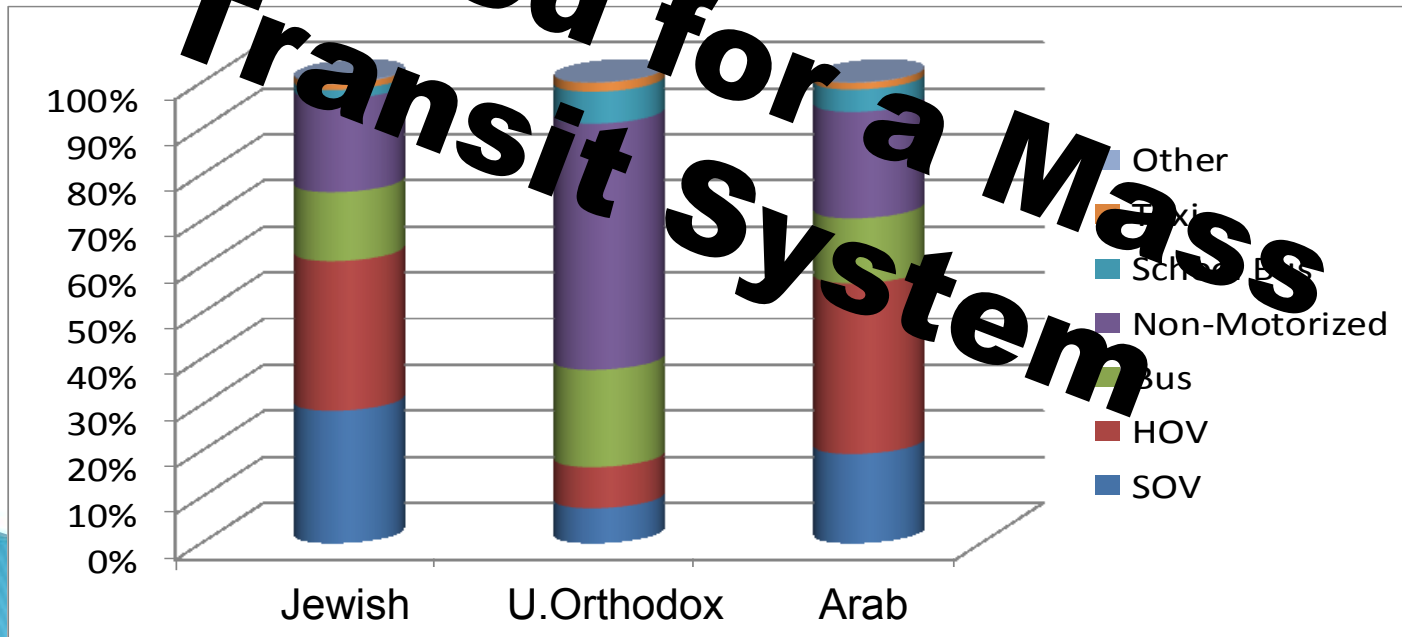
Traditional  
society



# Jerusalem at a Glance – Transport

Motorization Rate*	1996	2010	Modal Split	1996	2010	2010 daily motorized trips
Jewish	254	313	Car	60%	75%	1,500,000
Ultra Orthodox	57	55	Transit	40%	25%	500,000
Arab	88	143				

\* Motorization rate = cars per 100 residents



# Jerusalem at a Glance – LRT Line

- ▶ 13.5 km – so far (6+2 km extensions under construction)
- ▶ 23 stations (station per ~600m)
- ▶ Use of 2 32m Citadis vehicles (like Rabat & Casablanca)
- ▶ 130,000 passengers per day (around 25% of transit)
- ▶ Forecast correct (!)\*\*
- ▶ Line opened Aug. 2011
- ▶ B.O.T. project
- ▶ More lines on the way...



# Three Candidates for Mass Transit

- ▶ Bus, or: Bus Rapid Transit – BRT
- ▶ Light Rail Transit – LRT
- ▶ Underground Rail / Subway / Metro

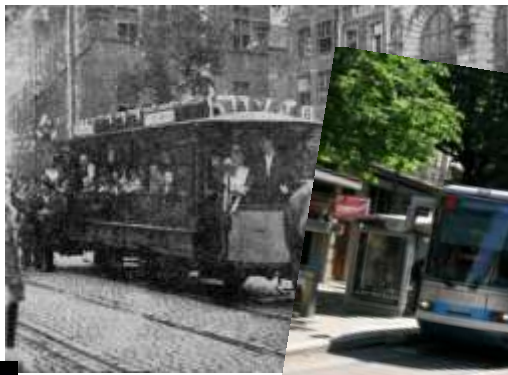
Big debate in the literature; Each has its pros and cons:

- ▶ Corridor capacity vs. infrastructure cost tradeoff
- ▶ Urban aspect as well...



# Light Rail Transit

- ▶ Modern version of the tram
- ▶ Predominantly a French idea, from 1980's:  
Nantes (1985), Grenoble (1987), ... Brest (2012)
- ▶ A unique concept, indeed integrating transport and urban planning





# Main Features of LRT

- ▶ Sustainable:
  - Electric powered (less air and noise pollution)
  - Can compete with private vehicle (reliability, comfort)
- ▶ Economic (relatively) – *cheaper than metro*
- ▶ Accessible/User friendly (low floor, street level)
- ▶ **High capacity transit vehicles** –  
up to ~500 passengers per train;  
*higher capacity than bus (up to X4)*



# Joint Transport & Urban Benefits

High capacity of single train enables high capacity corridor at “not-to-high” peak frequencies (~ 3-7’ headways).

- ▶ Transportation/traffic benefits:

- Supply high demand; up to 10,000 passengers pphpd
- Signal priority ⇒ increased **speed & reliability**

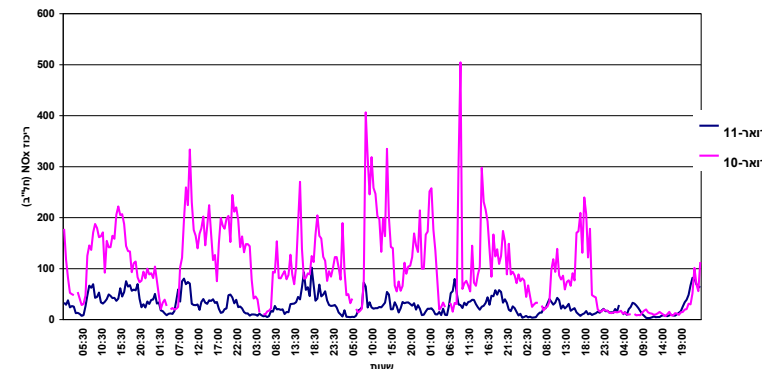
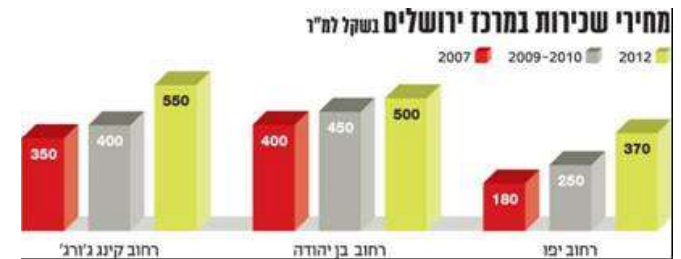
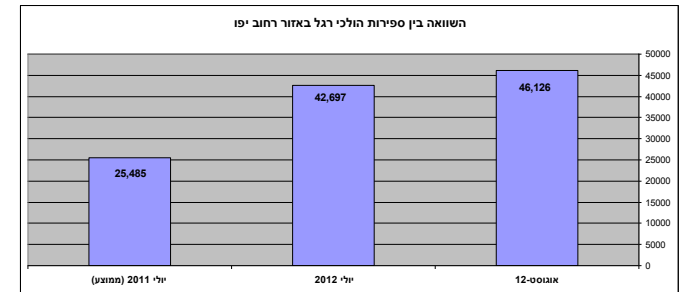
- ▶ Urban benefits

- Increased accessibility ⇒ Urban **densification**
- **Pedestrianization** ⇒ CBD revival ⇒ city revival



# Jerusalem – Initial Success Indicators

- ▶ Number of pedestrians in CBD
- ▶ Real-estate and rental costs
- ▶ Average travel times
- ▶ Pollution



# Beyond the Mere LRT Corridor...

- ▶ New hierarchy of public space users
- ▶ Expanding the pedestrian network
- ▶ Integrated transit & road masterplan
- ▶ Future urban projects



# New Hierarchy of Public Space Users

In intense commercial and/or business areas:

- 1) Pedestrians
- 2) Public transportation
- 3) Private vehicles



# Expanding the Pedestrian Network

## New traffic arrangements in the Jerusalem CBD

- ▶ Inner “Ring”
- ▶ LRT corridor
- ▶ BRT corridor
- ▶ 12 new pedestrian malls

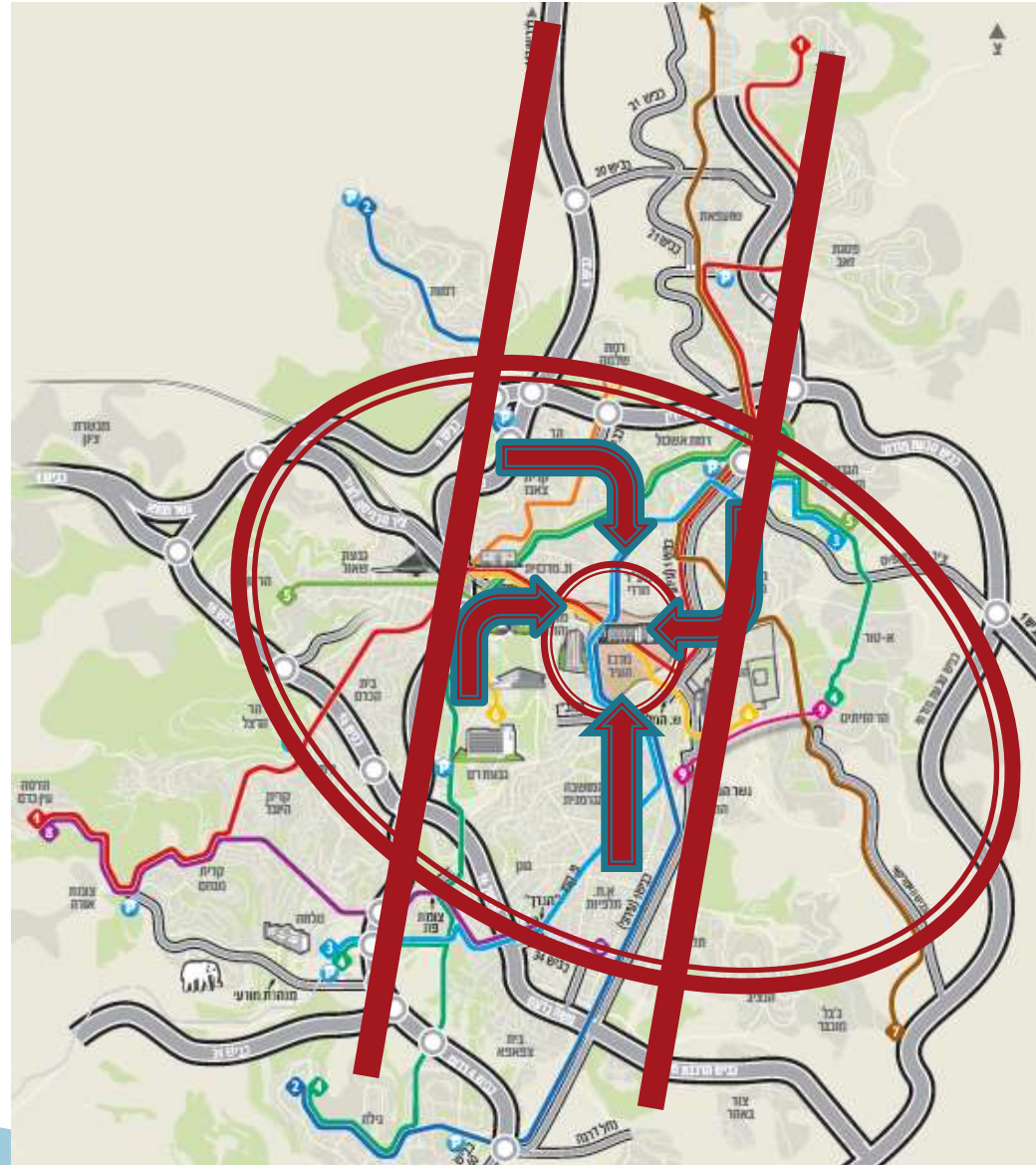


# The Pedestrian Network – Examples



# Integrated Transit & Road Masterplan

- 1) Pedestrianized CBD
- 2) Radial mass transit system (mostly LRT)
- 3) Arterial & ring roads
  - Minimize through traffic in CBD & neighborhoods
  - Park & Ride facilities in road-rail interfaces





# Future Urban I

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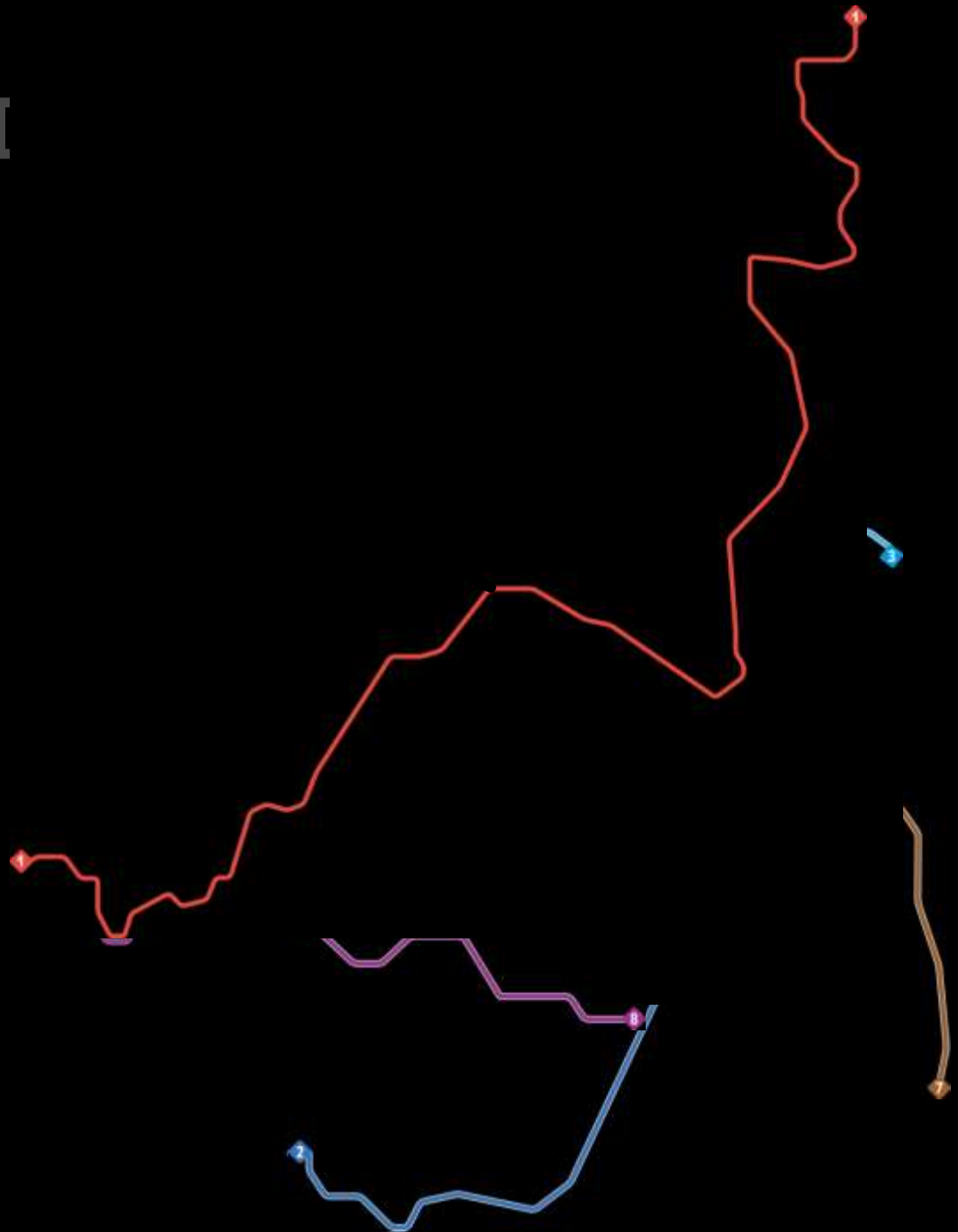
▶ Intern

▶ Mass

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# City Entrance Project

Main features:

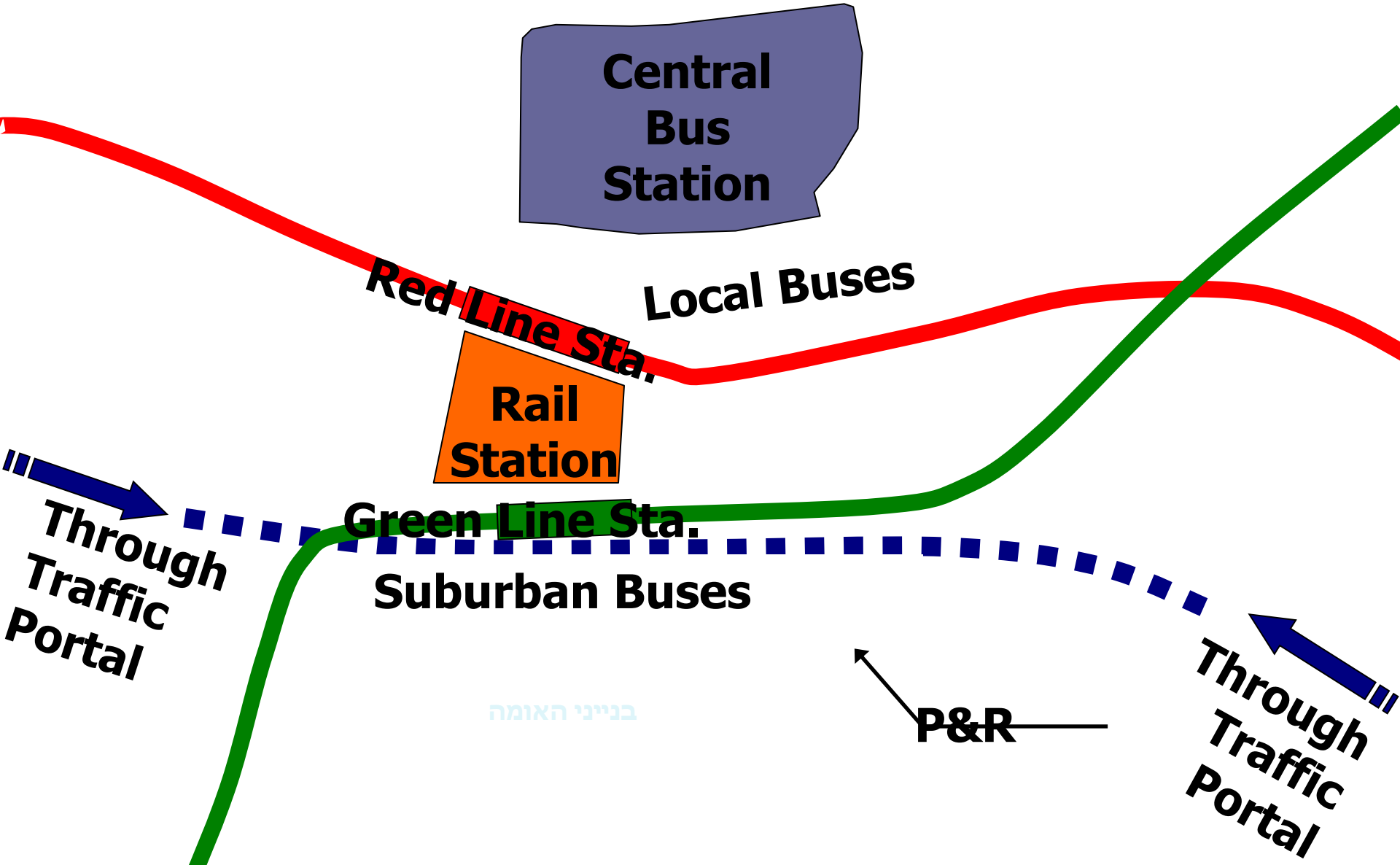
- ▶ 800,000m<sup>2</sup> new offices, hotels & commercial area
- ▶ Transportational hub
  - New rail station
  - Central bus station
  - LRT line – red
  - LRT line – green
  - Suburban buses
  - Local buses
  - Park & Ride



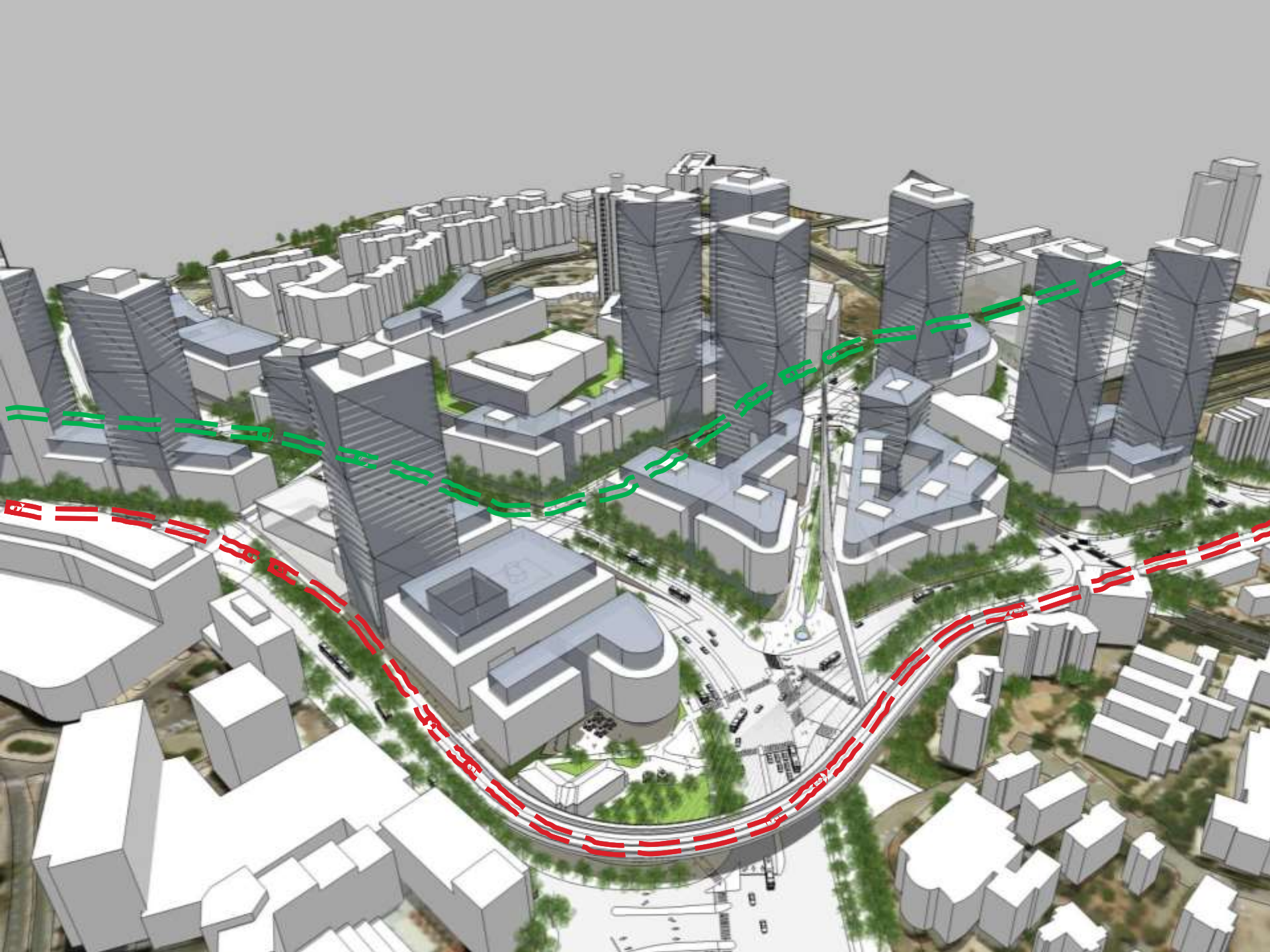
# City Entrance – Architectural Layout



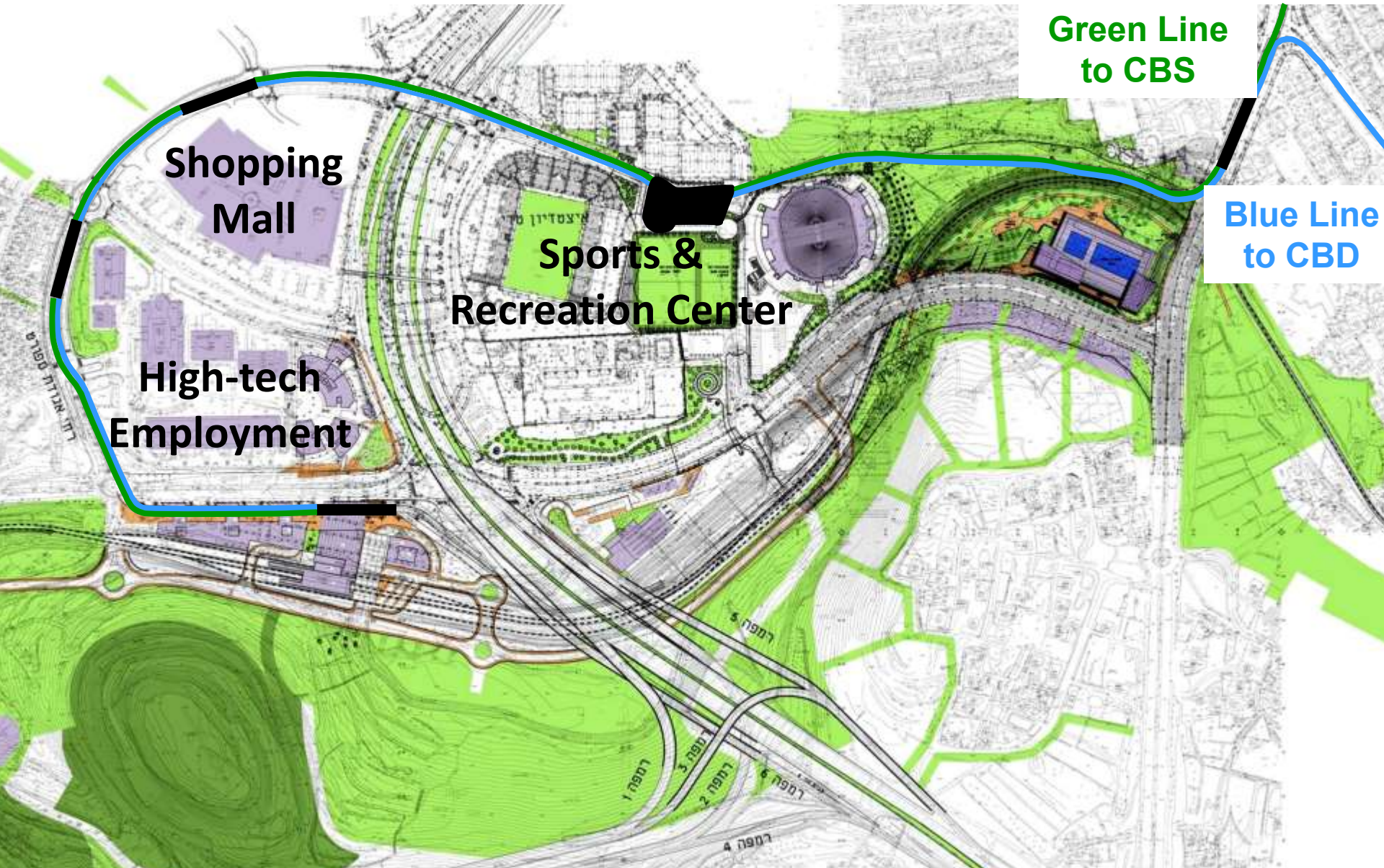
# City Entrance – Transportational Hub







# Malha Mixed-Land-Use Quarter



Green Line  
to CBS

Blue Line  
to CBD

Shopping  
Mall

Sports &  
Recreation Center

High-tech  
Employment

# Proposed Collaboration with CIVITAS

- ▶ Joint research on transportation, environmental, urban and social impacts of LRT implementation
- ▶ Sharing experience in:
  - Strategic transport planning: modeling, surveys & forecasting
  - Community involvement & public relations
- ▶ Gaining experience in:
  - Institutional frameworks; e.g. metropolitan planning authority
  - Detailed planning (esp. LRT); e.g. guidelines for urban design
  - LRT Operational aspects & signal pre
  - Promotion of bicycling and car-sharing





# Thank You for Your Patience!



Further questions:  
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