



# 1<sup>st</sup> RESOLUTE Workshop Florence 15.12.2015

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# Athens Metro System Overview

- System Description, Practices and Interdependencies
- Tools and Operational Data Available



# System Description

- Athens Transport System
  - Metro System



# The Transport System in Athens

- Athens: 3,827,624 inhabitants (2011)
- Car ownership rate: 384 cars/1000 inhabitants (2014)
- Modal split of 6.5 mi. daily trips
  - Car & other private transport 50.8%
  - Public Transport 37.6%, of which
    - bus 22.8%
    - tram / metro 14.6%
    - rail /commuter rail 0.2%
  - Bicycle 1%
  - Walking 10.6%



# Athens Main Road Network



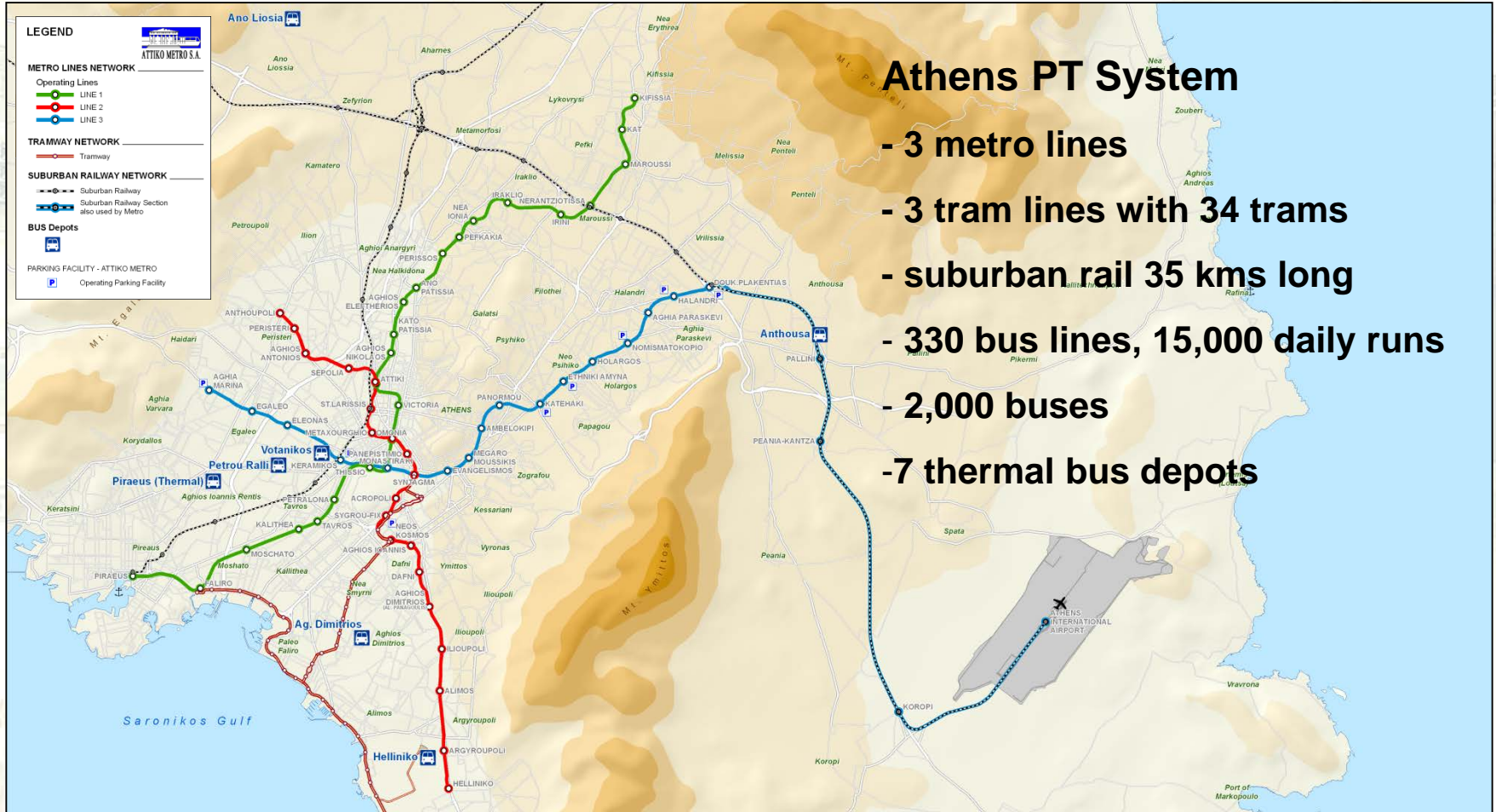
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# Athens PT System - Thermal Bus Depots



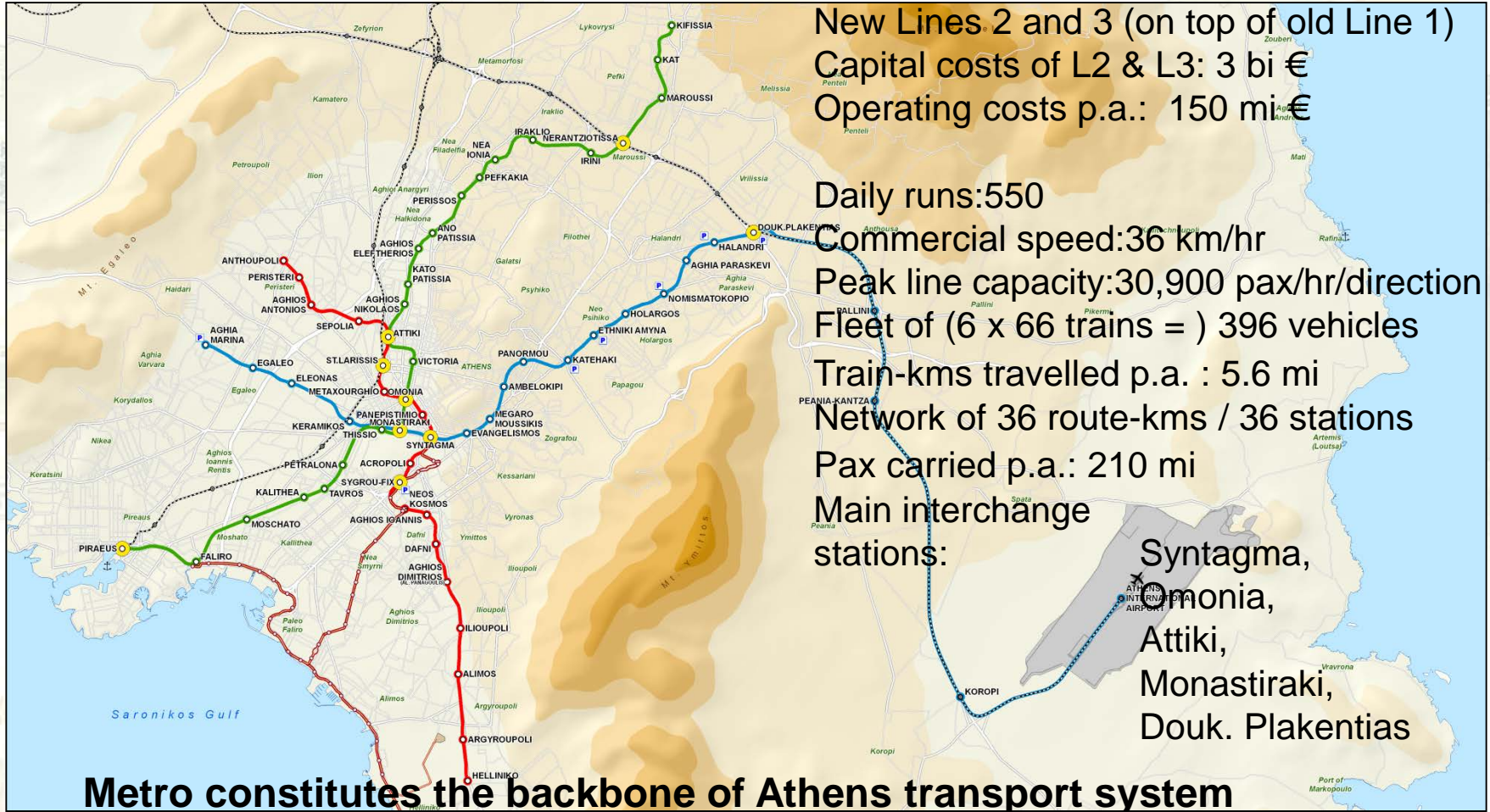
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# Attiko Metro's Critical Infrastructure and Interchange Stations





# Attiko Metro's Critical Infrastructure Data

- Peak hour headways: 4 min (Line 2) ÷ 4,5 min (Line 3)
- Operating hours:
  - 05:00 - 01:00 (Line 1)
  - 05:30 - 00:20 (Line 2&3)
  - 05:30 – 02:20 (Fri - Sat)
- Daily passenger traffic: 1,100,000 pax
- Peak hour traffic (8.5%): 93,500 pax
- Peak hours of passenger traffic:
  - 07:00-09:00 (morning peak)
  - 14:00-16:00 (evening peak)
- Maximum load sections:
  - Line 2: Omonia-Panepistimio, Syntagma-Panepistimio
  - Line 3: Syntagma-Evangelismos
- Station loadings: max. daily loading at Syntagma (Line 2  $\frac{1}{2}$  Line 3)





# Key Performance Indicators (KPIs)-1

- Quality KPIs (e.g. service reliability)
- Safety KPIs (e.g. number of accidents)
- Vehicle KPIs (e.g. train productivity)
- Staff KPIs (e.g. drivers' productivity)



# Key Performance Indicators (KPIs)-2

- Quality KPIs

- Train service availability (operated vs. scheduled kilometrage):

99.4% > 96%\_target

- Train service reliability (number of actual train runs with delay <2 min from scheduled headway as % of scheduled train runs):

- Line 2: 99.8%

- Line 3: 99.9%



# Key Performance Indicators (KPIs)-3

- Safety KPIs
  - Number of passenger injuries per 10,000 veh- kms operated: 0.08
- Vehicle KPIs
  - Revenue veh-kms operated per # of active vehicles in the metro fleet: 78,344 < 100,000\_target



# Key Performance Indicators (KPIs)-4

- Staff KPIs

- Labour efficiency

(total # of employees per 10,000 revenue veh- kms operated):

0.47 > 0.4\_target

- Duty roster efficiency

(mean driving time as % of paid working time):

64.7% < 80%\_target



# Practices and Interdependencies

- Routine Safety Rules and Procedures (prevention and avoidance)
- Emergency Rules and Procedures (response and abatement)
- Interdependencies with other actors



# Safety- related Systems

Attiko Metro's safety-related systems include i.a.

- Automatic Train Protection (ATP) and Supervision (ATS)
- Operation Control Centre (OCC)
- Closed Circuit Television (CCTV)
- Fire Detection and Fire Fighting
- Safety, Security, Access Control and Intrusion Detection Systems
- Tunnel Ventilation (smoke exhaust)
- Public Address System
- Intercom System
- Radio-Telecommunication (TETRA)



# Emergency Rules and Procedures

Emergency rules and procedures include i.a.

- OCC response to incidents (6-01)
- Fire fighting (6-02)
- Train evacuation in tunnel (6-03)
- Bomb threat (6-07)
- Controlled smoke channeling with ventilators (6-06)
- Station evacuation (8-06)
- Major incidents (9-01)
- Bomb blast – gas attack (9-06)



# Emergency Preparedness - Readiness Exercise

## Fire Drill Plan - Fire on Train entering a Station

- Scope of the Drill – Fire in a Metro Station: A fire breaks out in a train on level -3 / station platform.
- Purpose of the Drill
  - General purpose: Addressing fire incidents in Metro stations in the best possible way
  - Specific purpose: Evaluating the capabilities of the local Fire Stations and improving the cooperation between the Fire Department and the agencies involved.
- A detailed plan for personnel actions during the drill is available





# Interdependencies with Other Actors / First Responders

- The Operational Center for Civil Protection (KEEP) belonging to the General Secretary of Civil Protection, is responsible for the coordination and management of civil protection for response to emergency situations, targeted at the minimization of consequences. It is located at the premises of the coordinating center for fire services in Chalandri municipality (199 SEKYPs), it operates on a 7/ 24 basis and, in case of emergencies, it is supported by specialized scientific personnel.
- National Emergency Medical Services (NEMS)  
NEMS includes a Special Disaster Medicine Dept., responsible to offer support services for vital operations in special occasions such as mass casualties due to terrorist actions with weapons of mass destruction
- Hellenic Police Special Services (EKAM)  
EKAM supports and participates upon request in search and rescue operations at inaccessible or dangerous spots, as well as in the evacuation of casualties in major disasters.