Public transport integration in Thessaloniki, Greece: Planning a new transit network

Klotildi Saliara, M.Sc.
klotildi@hotmail.com

Motivation and Introduction

In Thessaloniki, Greece a new metro system is currently under construction transforming the present bus-only system to a bimodal network operated by multiple agencies (OATH, ATTIKO METRO).

Methodology and Process

In Thessaloniki, the first step is ensuring layout integration and the design of a new bus system integrated to the metro. After carrying out a literature review, the city’s boundary-conditions and the current transit system are analyzed, areas of concern are identified and measures are proposed to improve the current layout integration and plan in detail the new bus system.

Analysis of boundary conditions

- **Topology**: the urban structure is constrained by the Thermaic Gulf and a mountainous terrain.
- **Population**: 2nd largest Greek city (1,086,730 inh. in the metropolitan area).
- **Infrastructure**: ring roads and main arterials follow the city’s structure.
- **Economy and land use**: major economic, industrial, commercial and political center.

Analysis of current transit layout integration

- **Travel Demand**: ~2,000,000 trips/day, 25% in the city center, 94,500 cars in peak hour 70% increase in private traffic; vehicle occupancy 1,1 pers./veh.
- **Transit service analysis**
  - **Metro**: Attiko S.A.
    - 18 driverless vehicles (Phase I)
    - Phase 1: 1 line (extensions in Ph. 2 + 3)
    - 450 pas./veh.
    - 12 stations (+ 22 in Ph. 2 + 3)
    - 9.6 km (32.6 km after Ph. 3)
  - **Bus**: OATH
    - 604 buses
    - 75 routes
    - 180,000,000 pas/year
    - 2,000 stops
    - 970,000 km

- **Form and Connectivity**: linear development of the bus system, with radial and diametrical connections, long detours and travel times, limited intro- and interconnectivity
- **Area coverage**: acceptable, in general, but with excessive overlapping

Areas of concern

- **No hierarchical structure** for the transit network
- **No clear roles** and objectives for the modes
- **Excessive duplication of lines**
- **Parallel operation and competition**
- **Radial structure with saturation in central trunk section**
- **Insufficient connections and availability in certain areas**
- **Insufficient intermodal interchangeing points**

Results: Designing a new transit network

Planning Process

1. Determine clear roles for each transit mode
2. Follow the Development Axes of the Urban Structure
3. Clear hierarchy (Fishbone structure with 3 levels: trunk, branches, feeders)
4. Adequate coverage, as well as intra- and interconnections among the transit levels
5. Follow road network for speed and convenience
6. Improve Level Of Service
7. Detailed recruiting and improving of individual lines

Conclusions

- Introduction of rapid transit represents a golden opportunity to steer the city’s mobility into a more sustainable path. However, it must be implemented in coordination and full cooperation with the current transit modes and not competitively or independently of them.
- Clear roles, structure and forms of the network is crucial.
- Simplicity and clarity-often, transfers are more attractive than complicated and long routes.
- More analytical data, algorithms and models required for more accurate planning; bottleneck and weakness analysis.
- Integration is a multi-level process; as fundamental as it is, the layout is only the first step.
- Cooperation between operators is a prerequisite for the success of public transport integration
- Integration requires clear and ambitious goals allowing flexibility due to the complexity of different interests and stakeholders.
- Transit integration is part of a set of strategies that aim to achieve a shift towards more balanced modal share. Integration is one measure of a broad strategy: complementary measures are required (prioritization of public transport, parking management, etc.)
- Integration should transform transit from captive- to chosen-alternative.