Chapter 18
Multimodal Information Systems

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ABSTRACT

The number of individuals using public transportation is increasing. Transport companies want to ensure, at best, the satisfaction of the travellers. Nevertheless, a significant number of these companies sometimes pushes the travellers to confusion to compose their itineraries and obtain the required information. The authors suggest in this chapter integrating several traveller information systems into the same global system. This chapter aims to provide information to the traveller without concern for their location and optimize processing by limiting the number of involved nodes. They opted for a multi-agent system associated with the Voronoï decomposition of the global network.

INTRODUCTION

The third world countries experience an expansion in a variety of domains. Algeria, being one of these nations; is facing nowadays different challenges in terms of or related to logistics, management and transportations. As a matter of fact, collective migration to big cities for economic and social reasons occurring in the country have contributed in making competition harder, enterprises continue to multiply and innovate do that to meet the needs of the travelers.

The public transportation field nowadays, is part of the domains that are mostly concerned with this trend. The management of the transport network can be perceived according to two different angles. The first point concerns the companies of transport itself; it is about finding the best modeling of the network and the best combinations in order to implement a decisional support system (DSS) that serves

the objectives of the company. The second point concerns the travelers; it consists of satisfying their requirements and offering them the required information on the right time. In order to meet their needs, the transportation companies often, deploy on internet a passenger information system (PIS) so that to interact well with passengers.

In this chapter, we give an overview of the basic notions of public transport, and we explain the different tasks and situations that should be undertaken by an enterprise of public transport.

MULTIMODALITY

Before going deep into the rest of the chapter, it is necessary to define some basic concepts concerning modes of transport:

1. **Intermodality:** Defined by the successive use of the modes of transport to rally or join the starting point to the arrival point. It has to do with a variety of means of public transport (Eg: Bus, Tramway then Plane), it can also take the form of a succession of private transport mode then public transport mode (Eg: personal car then train). The intermodality is characterized by the notion of chaining that ought to be respected.
2. **The Multimodality:** Also called intermodality alternative, it is the use of various modes of transport for the same path. It is characterized by the notion of choice. The traveler can manage his ride according to days and reasons of the trip.
3. **The Multimodal Information:** Its main objective is to inform the passenger on the modes of transport that he attempts to take or on the eventual disturbance that might affect a given rode. This information might take two forms: either static if it is about a constant information (Eg: a touristic site), either dynamic if it depends on the state of the network (Eg: the leakage time in case of disturbance). The multimodal information deals with: itinerary calculations, leakage time, circulation conditions, information on fees and information on the waiting time.
4. **The Broadcasting Channels of Multimodal Information:** Multimodal information could be broadcasted through various means of communication. Due to the developments of web technologies, the undebatable first channel is internet. Each enterprise suggest its own route calculator via a web page. The cellular also permit an interaction in real time between companies of transport and the clients, the pieces of information that are broadcasted so often concern the disturbance of the network. Eventually, or finally, the boards help to display the timing of the modes of transport.

So, we can classify the companies of public transport in accord to their type of network:

1. **Multimodal Companies:** They are enterprises that include various modes of transport within their network.
2. **Monomodal Companies:** Unlike multimodals, they manage one mode of transport in their network only. It is nonetheless important to distinguish the line modes of transport. One mode of transport may operate on various lines linking two different points (departure and arrival).

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