

5.1.1

Distributed Computation in Planning of Transportation

Presenter

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The development of new technologies in the field of the computer science, particularly for applications based on distributed environments, offers new and better solutions for different fields of knowledge. One of these new technologies is the multitier software development (user interface, logic of the application and the data management), in such a way each one can be developed, implemented and/or executed in different platforms.

Transportation planning is an interesting problem, because it allows the evaluation of the supply and demand of transport over a certain road infrastructure. Based on that evaluation, the development policies for this infrastructure and for transportation are defined.

The transportation planning consists of 4 steps, according to one of the most diffused models, the sequential model : Generation, Distribution , Mode Choice , and Traffic Assignment.

Currently transportation planning is carried out with single user computational tools supporting the processing of large data volumes, but not offering facilities to share data, treatment distribution, use of specialized applications and they neither offer the possibility to involve the drivers in the planning phase, for instance in the automatic capture of surveys and also in the diffusion of information that involves them.

PlaTrans is a computational application that supports the process of transportation planning implementing the Sequential Model and based on multitier architecture. For each stage of the Sequential Model different algorithms were implemented, in such a way that the planner can choose, at any time, the one that seems the more appropriate. PlaTrans also guarantees the communication of information among these different algorithms and makes a friendly presentation.

The multitier architecture allows in PlaTrans the existence of multiple users, the sharing of data among them and its efficient execution because it takes advantage of the existent computational and network infrastructure. Finally, the architecture facilitates the inclusion of other algorithms for each stage, algorithms that can be developed independently and its inclusion in PlaTrans is made in an almost transparent way for the final user.