

Using real world distances in logistics management

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Summary

Logistics deals with the planning and control of material flows and related information in organizations, both in the public and private sectors. Modeling and solving logistic problems often requires a considerable amount of data and the quality of the gathered data may influence algorithms' results. In this study we address the issue of gathering automatically, from geographic information systems (GIS), real world distances between nodes in a logistic network. We will show how the efficiency is of paramount importance when retrieving large amounts of logistic data and how our proposed architecture makes possible real data retrieving in reasonable times

Keywords: logistics, VRP, GIS, real travel distances

Conclusions

Calculating real distances instead of orthodromic simplifications is a must when dealing with complex logistic management problems. Nowadays, it is perfectly possible to do so by using publicly available web-based GIS systems capable of calculating real distances between nodes in a transportation network efficiently. However, in real logistic problems, with possibly thousands of nodes, the matrixes containing real distances (and/or times) between nodes are challenging to calculate. Actually, the time needed to obtain such matrixes can easily be orders of magnitude bigger than the time needed for solving complex logistic management problems with elaborated metaheuristics. For some reason, the scientific literature has neglected this important fact. In this work we have shown two techniques, namely, threading retrieval and intelligent request construction, that, when combined, allow for drastic improvements in the times needed to calculate such matrixes.

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