

Efficient routing with multiple route planners

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Nothing is more fun than exploring the world around you. When travelling by public transport, one of the biggest challenges is to find the best route from point A to point B. This becomes harder as the number of possible transportation modes grows. For example: how do I get from Ghent, Belgium to Canterbury, England? Can I take the Eurostar-train to Ashford and transfer on a local train? Do I drive up to Dunkerque to take the ferry, or do I better take the one in Ostend?

Many efforts have been made to create one big route planner that unites all possible forms of transport (e.g. Google Transit). Currently, these initiatives require the raw data of the transit networks to be able to incorporate them. However, the exchange of this data knows many legal and technical issues: whos responsible for faulty routes? How can last minute schedule changes be communicated? etc.

In practice, most public transit companies have a route planner available on their website. Combining these route planners into one global system would solve the current problems. The information required by the global system is reduced to a minimum: only the locations of the stations is known. Trying to find the optimal solution in a straightforward manner would result in hundreds to thousands of requests. As each request to a route planner costs at least a few 100 milliseconds, making that many requests is out of the question.

A request consists out of three components: the source station, the target station and the departure time. The problem can be reduced to the following question: which pairs of stations provide the best routes? By using a few heuristics, we try to determine those pairs. The most promising heuristic looks at the result of previous requests: station pairs that proved to have a good connection in the past, probably will have a good connection now. Other heuristics, for example identifying important transportation hubs, look promising but have yet to be optimized.