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CALL FOR PAPERS

Expansion of a dynamic model within a larger static model network in Montreal

Title of the paper

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BIOGRAPHICAL SUMMARY FOR MAIN AUTHOR (100 words mini-CV)

Pascal Volet holds a Civil Engineering degree from McGill University in Montreal and a Master's in Civil Engineering from the University of Waterloo, Ontario. He is presently the main transportation modeller at the City of Montreal, after a 20 year international career as a consultant in traffic engineering and transportation modelling.

Pascal has implemented and/or upgraded both large and small network simulation models in several cities in North America and abroad.

AUDIOVISUAL SUPPORT NEEDED

(A PC with Office XP, a projector, and a microphone will be provided. Please mention any other needs.)

ABSTRACT (500 words)

The City of Montreal, in association with the Ministry of Transportation of Quebec (MTQ), has been implementing a dynamic assignment model in its downtown core and outlying Notre-Dame Street corridor for the past two years. This meso-simulation tool has found a niche in between the larger existing static model covering the metropolitan region (3,6M inhabitants, 5500 km², 88 municipalities) and local micro-simulation models, which reasonably cover a maximum of a dozen city street blocks or up to an area of 2 or 3 km². The area covered by the original Dynameq implementation is 30 km². The model has allowed the analysis of several future options for the modernization of the 9 km Notre-Dame Street corridor, a major feeder to the CBD and historically the first major arterial on the Island of Montreal.

The subtleties of the different geometric and signal timing options were able to be captured with the use of this relatively new tool, which allows for a greater confidence level of volumes, travel times and congestion projections. These data may then be analyzed in more detailed, if need be, with well known and widely spread micro-simulation tools such as Synchro/ SimTraffic, AIMSun II or VISSIM, among others.

As the tool has proved its value, inevitably an expansion of the network was considered in order to capture corridor shifting at the edges of the area. Ultimately, the northern expansion of the model would include the major east-west freeway serving the centre of the island, autoroute A-40, which could act as a complement to the Notre-Dame corridor along the south edge of the island. A first expansion of the modelling area, midway to the A-40, that would also cover the major north-south autoroute Décarie at its western edge, has been undertaken in the past six months.

Aside from the network re-coding (both the original and expanded networks use the regional EMME/2 network and TAZ system as their base), one the major issues was the conservation of the vehicle matrices developed and adapted for the original network (auto and two truck categories, in three 60 minute slices for both AM and PM peak periods) when expanding to the larger network.

With the help of EMME/2 matrix calculating tools, new data calculated using a sub-area of the regional network was appended to the original base matrix to produce the expanded network data. The calibration and adaptation of these new matrices are still in process, but the first unaltered results proved to already be within very reasonable error margins.

Ultimately, it is foreseen to integrate the central part of the island in a model that would cover over 200 km² and 10 of the 13 existing bridges. This area, with a population of 1,5M, would also include all three north-south freeways, the whole CBD (already simulated in the existing enlarged network) and three of the four major industrial sectors on the island.

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