STAFF REPORT
INFORMATION ONLY

Response to Councillor Fragedakis Correspondence dated September 21, 2015

Date:	January 21, 2016
To:	TTC Board
From:	Chief Executive Officer

Summary

This board report responds to correspondence to the Chair of the Commission from Councillor Mary Fragedakis on September 21, 2015 requesting that TTC review the process that Stockholmstag uses to predict delays on Stockholm's public transit system to see if that could be adapted to do something similar here in Toronto.

The existing TTC process, Central Signalling System (CSS), provides Traffic Management (TM) at a level of detail that meets the TTC's requirement for both delay prediction and customer information.

The Stockholm TM system provides a significantly higher level of dynamic control for a constrained, complex and diverse network with mixed freight, passenger trains, and variable speeds.

Given the simple layout and short length of the TTC subway lines with homogenous trains (and performance) relative to mainline rail networks, introduction of the TM system in Stockholm would not improve delay prediction over that already provided by CSS which is presently displayed in real time through customer information screens.

The nearest and most appropriate application of TM near to Toronto would be the rail corridor between Toronto and Montreal where the mix of Via Rail, Go Transit and freight trains provides complex routing of trains and a high propensity for delays.

Financial Summary
This report has no financial impact.

The Chief Financial & Administration Officer has reviewed this report and agrees with the financial impact information.

Accessibility/Equity Matters
There are no accessibility or equity issues matters arising from this report.

Decision History
This evaluation and report has been provided at the request of Councillor Mary Fragedakis in September 2015 for the TTC to review the process that Stockholmstag uses to predict delays on Stockholm's public transit system and to see if that could be adapted to do something similar here in Toronto.

Comments
TM has been developed by a number of Signalling Engineering companies including GE, Alstom, Hitachi, Siemens, and Thales to maximise capacity and throughput on busy complex mainline rail networks. The system in Stockholm was designed by a local consulting firm, QAB. They are typically deployed where congestion and delays are common, or where capacity constraints exist, and on complex networks with extensive convergence and divergence junctions. TM looks at a train's type, speed, length, weight, acceleration and braking performance and station stops and dwells. This is achieved by plotting time and distance on the X and Y axis on a graph. As trains maintain schedule, run early, get delayed by other trains etc., the real time graphs plot progress and flag up conflicts (and delays) which may occur in the remainder of the train's journey. These conflicts allow dispatchers and controllers to make real time adjustments to service pattern and train order. These delays and potential conflicts can also drive customer information systems to provide accurate next train information.

The algorithms are able to predict potential delays/conflicts and their impact for the remainder of an individual journey or for a section of track where trains are due to follow each other in a particular order or a different stopping pattern.

The most effective use of TM is on mainline/suburban rail where commuter trains, Inter City, and Freight trains all use the same tracks but with different types of trains, of different length, acceleration and braking performance, maximum speed and stopping patterns.

The current CSS system deployed on the TTC provides the dynamic information required to predict delays and drive customer information screens in real time for our subway system. With respect to service delays to our customers, a five year plan has been developed and is underway to reduce the frequency and delays in the subway operations.

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