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YORK REGION TRANSIT COMPUTER-AIDED DISPATCH/AUTOMATIC VEHICLE LOCATION SYSTEM SOFTWARE AND HARDWARE MAINTENANCE AND SUPPORT AGREEMENT

The Transit Committee recommends that Council adopt the recommendations contained in the following report dated December 17, 2008, from the Commissioner of Transportation Services.

1. RECOMMENDATIONS

It is recommended that:

1. Regional Council authorize extension of the current Viva and York Region Transit Computer-Aided Dispatch and Automatic Vehicle Location system software and hardware maintenance and support agreement with INIT Inc. at a total cost of \$1,070,500, excluding taxes.
2. The term of the agreement be for a period of three years, commencing on February 1, 2009.
3. The Regional Chair and Regional Clerk be authorized to execute any necessary amendments to the existing INIT Inc. agreements, subject to the approval of Legal Services as to form and content.

2. PURPOSE

This report seeks Regional Council authorization for the extension of the current Viva and York Region Transit (YRT) Computer-Aided Dispatch (CAD) and Automatic Vehicle Location (AVL) system software and hardware maintenance and support agreement with INIT Inc., the original equipment manufacturer, for a period of three years, commencing on February 1, 2009. The software and hardware maintenance and support is required to continue getting bug fixes and minor upgrades to existing software, hardware repair or replacement, problem resolution, and 24/7 support whenever needed.

3. BACKGROUND

The Viva CAD/AVL system was provided by INIT Inc. as part of the original supply contract with Kiewit EllisDon, the Viva design-build contractor. The INIT CAD/AVL system, which consists of in-vehicle system and other components, installed on 90 Viva buses, has been in operation in York Region since the initial launch in September 2005. On June 22, 2006, Regional Council authorized installation of the CAD/AVL system on

conventional York Region Transit buses. This installation is in progress and is likely to be completed by January 2009. INIT's integrated central system consolidates the various functionalities and other software solutions for analyzing, planning, implementing and improving internal operating processes with the mobile system in the vehicle. The performance of the INIT CAD/AVL system has been very satisfactory and widely appreciated by customers.

The following functionalities are provided as part of the CAD/AVL system:

- Real-time tracking of vehicles at the transit control centre.
- Voice and data communication with vehicles.
- In-vehicle variable message sign (VMS) and audio announcement.
- Driver public address (PA) system, a covert microphone and emergency switch.
- Automatic passenger counters (APC).
- Central data processing and analysis software.
- Viva variable message signs (VMS) at stops to display real-time departure information of buses.

Computer-Aided Dispatch and Automatic Vehicle Location system consists of many different software components

The following software modules have been purchased for the CAD/AVL system:

- MOBILE - ITCS – which is the central system software and includes features such as graphical user interface, managing signs at Viva stations, connection protection between routes, replay historic route performance data, stand-by during failure and real-time interface with other systems, etc.
- MOBILEplan – to manage YRT and Viva schedules.
- MOBILEstatistics – to manage the historical performance data and create reports.
- MOBILEic – to manage and configure in-vehicle components.
- MOBILEforms – to allow dispatchers to create forms.
- MOBILEreports – to allow dispatchers to generate reports.

The existing software and hardware maintenance and support agreement ends on January 31, 2009

As part of the original supply contract with Kiewit EllisDon, the Viva design-build contractor, YRT has an existing software and hardware maintenance and support agreement which ends on January 31, 2009. INIT Inc. has been providing satisfactory software and hardware maintenance and support for the last three years.

Reasons for software and hardware maintenance and support agreement

The CAD/AVL central system, in-vehicle, garage and field software and hardware components are proprietary in nature and YRT requires continuous support from INIT

Inc. to maintain its daily operations. YRT's ability to provide excellent customer service depends on these software and hardware components working properly.

4. ANALYSIS AND OPTIONS

SOFTWARE MAINTENANCE AND SUPPORT

INIT Inc. provides the following services as part of the software maintenance and support agreement

- INIT ensures that software operates in conformity with the descriptions and specifications.
- If any error is detected by YRT, INIT provides either telephone support or through a remote connection, in the form of technical assistance and advice on the use and configuration of the software.
- INIT corrects software deficiencies within a timeframe as agreed with YRT based on the severity of the deficiency.
- INIT provides YRT with bug fixes and minor upgrades of the software at no additional charge.
- Provide 24/7 support.

The Region will pay for software maintenance and support

Table 1 provides a summary of the CAD/AVL system software maintenance and support costs to be paid to INIT Inc. over the next three years.

Table 1
Software Maintenance and Support Cost

Description	Year 2008 (Existing)	Year 2009	Year 2010	Year 2011	Total Cost 2009 - 2011
CAD/AVL central system, in-vehicle, garage and field software for up to 400 vehicles	\$230,750	\$210,000	\$216,300	\$280,000	\$706,300

The software maintenance and support cost in 2009 is approximately 9% lower than in 2008. YRT staff have been able to successfully negotiate this reduction as a bulk discount due to the extension of the CAD/AVL system onto YRT buses. The software maintenance and support cost in 2010 is 3% higher than in 2009; however, it is approximately 6.3% lower than what has been paid in 2008. The software maintenance and support costs in 2011 are approximately 29.4% higher than in 2010 due to

approximately 300 additional YRT buses and equipment at three maintenance garages coming out of warranty.

The annual software maintenance and support costs in 2009 are approximately 15.7% of the total cost of software purchased (\$1.34 million) which are already out of their warranty period. The annual software maintenance and support cost in 2011 is approximately 11.2% of the total cost of software purchased (\$2.5 million) which will be out of their warranty period at that time. Typically, an annual software maintenance and support ranging between 15-20% is an acceptable industry standard for specialized software systems. All of the quoted annual software maintenance and support costs are within the acceptable range.

Table 2 provides a summary of the CAD/AVL system software and other support and maintenance costs which will be added to the above costs as and when new vehicles and variable message signs are purchased by YRT.

Table 2
Additional Software Maintenance and Support Cost
New Vehicles and Variable Message Signs

Description	Rate for each additional Vehicle or Variable Message Sign
Total vehicles 400 - 500	\$400
Total vehicles 500 - 600	\$350
Total vehicles greater than 600	\$300
Variable Message Signs	\$75

HARDWARE SUPPORT AND MAINTENANCE

INIT Inc. has been providing hardware maintenance and support for the Viva in-vehicle components and variable message signs installed at Viva stations. After the expiry of the warranty period in January 2008, responsibility for in-vehicle hardware maintenance and support costs has been transferred to Veolia, the Region's contractor operating Viva services.

YRT has decided that the maintenance of the CAD/AVL hardware installed on conventional YRT buses should be done through in-house staff

This is a cheaper option as staff could perform maintenance on the buses operated by all three conventional contractors rather than each contractor hiring their own staff for the maintenance. Therefore, it is necessary that YRT enter into an agreement with INIT Inc.

for providing in-vehicle hardware maintenance and support for the YRT conventional buses which will come out of warranty in 2011.

YRT will be paying for the in-vehicle hardware maintenance and support on a time-and-material basis

The hourly labour rate for INIT staff and the rates for different components are agreed upon as part of this agreement. INIT will invoice YRT for the actual time and parts used for the repairs. This is a much cheaper option, as the reliability of in-vehicle hardware components has been very satisfactory and it is not necessary to enter into an annual lump sum cost maintenance and support agreement.

YRT has been paying for hardware maintenance and support costs for the variable message signs installed at Viva stations on an annual lump sum basis

YRT should continue to pay as per the current agreement since variable message sign failures happen quite frequently and it is cheaper to pay on a lump sum basis rather than a time and material basis. INIT is continuing to investigate the incidents of failure and it is in their best interest to find a solution as soon as possible. When a solution is found and the incidents of failure are reduced, YRT will switch to maintenance and support on a time-and-material basis.

INIT Inc. will provide the following services as part of the hardware maintenance and support agreement

- Variable message signs - defective parts will be repaired or replaced with a new part by INIT at their cost. INIT will pay the shipping costs of defective and replacement parts to and from INIT.
- In-vehicle hardware components - INIT will repair the defective parts and invoice YRT based on actual time and material spent. YRT will pay the shipping costs of defective and repaired parts to and from INIT.

YRT will also purchase spare parts from INIT Inc.

These spare parts are required for the repair of CAD/AVL system components damaged beyond repair or due to vandalism. These parts are proprietary in nature and are required to be purchased from the original manufacturer.

YRT will pay for hardware maintenance and support

Table 3 provides a summary of the estimated variable message sign and in-vehicle maintenance and support costs to be paid to INIT Inc. over the next three years. It also

provides an estimated cost of the spare parts to be purchased over the next three years. The amount paid to INIT Inc. will be based on the actual spare parts purchased.

Table 3
Hardware Maintenance and Support Cost

Description	Year 2008 (Existing)	Year 2009	Year 2010	Year 2011
Variable Message Signs hardware maintenance and support	\$39,600	\$39,600	\$39,600	\$45,000
In-vehicle hardware components maintenance and support on a time and material basis	-	-	-	\$90,000 ¹
Spare Parts	-	\$50,000 ²	\$50,000 ²	\$50,000 ²
Total Cost				\$364,200

¹ Estimated at 50% of the cost if YRT had entered into an agreement on an annual lump sum basis.

² Estimate based on the spare parts purchased in the last two years.

The variable message sign hardware maintenance and support costs in 2009 and 2010 are the same as in 2008. The variable message sign hardware maintenance and support cost in 2011 is approximately 13.6% higher than the cost in 2010 due to approximately 15 additional signs coming out of warranty.

Labour charges for in-vehicle hardware components maintenance and support on a time-and-material basis will be invoiced at the rates outlined in Table 4.

Table 4
Labour Rates (USD)

Description	Year 2009 (Per Hour)	Year 2010 (Per Hour)	Year 2011 (Per Hour)
Service, Repair, Production Technician	\$110	\$113	\$117
Project Manager, Hardware and Software Engineer	\$163	\$168	\$173
Senior Project Manager, Senior Hardware and Software Engineer	\$187	\$193	\$199

The CAD/AVL system is highly sophisticated and proprietary and therefore requires specialized training and equipment for the hardware support and maintenance. Contractor

personnel that work on these devices must be suitably trained and equipped. The hourly rates are, therefore, considered reasonable.

5. FINANCIAL IMPLICATIONS

Tables 1 and 3 provide a summary of the estimated software and hardware maintenance and support costs for the year 2009, 2010 and 2011.

Sufficient funding is contained in the proposed 2009 Business Plan and Budget to cover these costs. Sufficient operating funding will also be included in 2010 and 2011 Business Plans and Budgets to cover the respective costs.

6. LOCAL MUNICIPAL IMPACT

There is no direct municipal impact associated with this project. It is anticipated that YRT will be able to maintain existing levels of service as a result of the software and hardware maintenance and support provided by INIT Inc. as part of this agreement.

7. CONCLUSION

It is recommended that the current agreement with INIT Inc., the original equipment manufacturer for Viva and York Region Transit Computer-Aided Dispatch and Automatic Vehicle Location system software and hardware maintenance and support, be extended for a period of three years, commencing on February 1, 2009, at a total cost of \$1,070,500, excluding taxes.

For more information on this report, please contact Rajeev Roy, Manager, Transit Management Systems, at Ext. 5682.

The Senior Management Group has reviewed this report.