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YORK REGION TRANSIT
TRANSIT MANAGEMENT SYSTEMS MANAGER

The Transit Committee recommends:

1. The recommendations contained in the following report, October 26, 2004, from the Commissioner of Transportation and Works be adopted; and

2. Staff be requested to provide a report to Committee as soon as possible indicating the cost savings resulting from hiring the Transit Management Systems Manager.

1. RECOMMENDATIONS

It is recommended that:

1. Regional Council authorize the establishment of a Transit Management Systems section within York Region Transit as outlined in this report.

2. Authorization be given to hire a Transit Management Systems Manager and initiate the corresponding employment search for this position immediately.

2. PURPOSE

The purpose of this report is to seek Regional Council authorization to establish a Transit Management Systems (TMS) section within York Region Transit (YRT) and proceed with the hiring of a TMS Manager.

3. BACKGROUND

The York Rapid Transit Plan (YRTP) involves the initial deployment of a "Quick Start" Bus Rapid Transit (BRT) system in York Region in September 2005. The Quick Start project is currently entering a new phase, transitioning from planning to implementation, placing increasing daily demands on present YRT staff. YRT will ultimately be responsible for managing day-to-day operations of the BRT system.

The BRT system will incorporate a multitude of features for intelligent tracking, monitoring, and management of vehicles and service as part of a direction to provide an advanced, state-of-the-art transit system. These features are based on an infrastructure of technology and services not currently used by YRT. Components of the system include equipment and software located in BRT vehicles, at shelters and terminals, at bus depots, and at a central control center.

In addition to the BRT system, YRT has a vision for future upgrades and enhancements to their conventional fleet operations, including select technology features similar to those proposed for the BRT system. These enhancements will provide benefits such as an increased quality of service, improved tracking and dispatching of vehicles, and a consistent level of functionality across BRT and YRT conventional fleets.

To provide expertise in the area of transit technology and systems, Marshall Macklin Monaghan and LEA Consulting Ltd. (MMM/LEA) have been working under contract to the Region in the role of Owner's Engineer. MMM/LEA are overseeing the design and implementation by York Consortium 2002 of all transit management systems, on behalf of the Region, which will be part of the BRT project. MMM/LEA are providing expertise as part of a required due diligence effort for design and implementation reviews, and are continuing to provide oversight and input in this area on behalf of the Region. LEA is specifically providing technology management and Intelligent Transportation Systems (ITS) related expertise in the context of the Owner's Engineer assignment.

4. ANALYSIS AND OPTIONS

The combination of BRT technology, systems, and YRT's vision for future enhancements has created a void in the functional area of Transit Management Systems (TMS) within YRT. Actions are required of YRT stemming from demands placed on it involving the implementation of the Quick Start system and related new transit management systems operational directions. Build up of expertise is required for YRT to assume its role and responsibility with respect to the present Quick Start initiative, its ultimate handover, and the future system enhancements for YRT's conventional fleet.

The areas of responsibility for TMS involve providing management, direction, and expertise for the following ITS operation elements:

- Computer Aided Dispatch / Automatic Vehicle Location (CAD/AVL) Systems.
- Automatic Fare Collection (AFC) systems and associated revenue management.
- Transit Signal Priority system integration with York Region Roads Operations.
- Advanced traveler information display and annunciator systems.
- Supporting Information Technology and Telecommunications systems.

These new transit-specific technologies are important assets for the Region and will require effective stewardship. This stewardship affects several areas of responsibility including:

- The need to integrate the design, operation, and management of Quick Start ITS technologies with other existing/planned YRT technologies and Regional networks, in particular in the area of customer information (e.g. web site, Interactive Voice Response systems), as well as with the Region's communications strategies.
- Ability to manage and negotiate the extension of the ITS technologies to the rest of the Region's transit fleet leveraging the Quick Start BRT systems contracts.

- Effective management and oversight of central control center resources.
- Effective utilization of data for purposes of operations & maintenance (O&M) contractor performance monitoring associated with ITS and AFC equipment.
- Effective utilization of data for purposes of analysis for transit signal priority, service planning, and marketing.
- Need to closely supervise AFC systems because of their direct impact on revenue management, including warranty claim administration and post-warranty maintenance.

As a result, YRT is developing an integrated technology strategy for all of the Region's Transit Management Systems in order to address the challenges of technology stewardship, to enable an integrated approach for all advanced transit technologies in the Region, and to allow for effective management and utilization of these systems. Steps taken as part of this initiative have included:

- The identification of TMS-related functional activities and roles.
- The development of an Organizational Model for management of these TMS functional activities within YRT.
- An assessment of the initial resource requirements for effectively managing the Region's Transit Management Systems.

The structure of the functions required under the proposed TMS section is outlined in *Attachment 1*. The chart outlines an initial layout of staff resources required to implement the TMS function and identifies the sub-functions involved. These staff resource requirements include a TMS Manager (immediate need), to manage this entire functional area and to provide oversight for the ITS and AFC system deployments, maintenance and warranty administration, as well as supervisor and data management support.

An integrated TMS strategy will ensure an integrated approach to the management of transit technology in the Region, including systems already provided or planned by YRT (e.g. YRT Website), new systems being deployed for Quick Start (e.g. ITS and AFC), the central control center, and the technologies budgeted for deployment on the rest of the Region's fleet.

The integrated TMS strategy will be designed to avoid any duplication of effort by ensuring that all reporting related to all TMS systems is done through the TMS Manager to the General Manager of York Region Transit. There would therefore be clear lines of responsibility and of accountability.

4.1 Proposed Direction

It is proposed that authorization be given for funding to establish the function of YRT Transit Management Systems as a newly formed section of YRT. The successful implementation of this function should begin with the establishment of a TMS Manager position within YRT. The TMS Manager will address the current need for ownership in the area of TMS and will also provide the foundation for any future support staffing and resource requirements.

4.2 Justification

A timely opportunity exists for YRT to assume responsibility for technology management and provide coherence to the current Quick Start BRT process by establishing a TMS section and implementing a TMS Manager position. It is important to note, however, that even in the absence of the Quick Start project, the function of TMS is a vital component to YRT and implementing a TMS function will be required of YRT to move forward as a modern transit authority.

A TMS Manager is required as soon as possible in order to undertake all necessary work leading up to Quick Start implementation. Authorization is therefore being requested to proceed with this hiring prior to approval of the 2005 Business Plan and Budget. The following issues will need to be addressed:

- Facilitate the increasing, ongoing liaison with other YRT divisions and other Regional departments in support of Quick Start.
- Confirming the integrity of BRT technology installations such as server and software configurations.
- Addressing of pertinent internal TMS issues associated with the Quick Start project and how they will affect YRT operations.
- The definition and integration of required internal work flow processes.
- Work with York Region IT to make service arrangements and for smooth system integration.
- Determine operations limits for TMS such as acceptable downtime and redundancy requirements and effect corresponding operations measures to support such requirements.
- Interact with Quick Start suppliers and integrators for systems design specifications review and approval.
- Review and comment on test procedures for BRT ITS and AFC technology equipment.
- Witness testing of BRT technology equipment.
- Oversee the deployment of a central control center.

In addition, the TMS Manager is required to provide direction for the future of YRT's fleet, specifically:

- Transfer of technology knowledge from Quick Start BRT evaluation system to YRT.
- Defining the TMS needs for YRT conventional fleet.
- Drafting policies for YRT Transit Management Systems.
- Develop effective use of technology: management data, planning, customer information systems, etc.
- Implement a corresponding planning and design program for deployment of enhancements.
- Assist in defining future operations and maintenance (O&M) contracts related to TMS within YRT.

- Develop administrative and document control processes for the TMS function.

4.3 Transition Strategy

As part of an integrated TMS Strategy, the recruitment of a permanent TMS Manager will require time. However, given the aggressive schedule for Quick Start, many TMS and technology related issues are increasingly being raised and these issues have to be addressed in a timely manner before the TMS Manager can be on-board. There is therefore a pressing need to develop a transition strategy involving an Interim TMS Manager support function.

As part of the MMM/LEA Owner's Engineer team for the QS project, LEA Consulting Ltd. has the experience and personnel available to provide the needed Interim TMS Manager functional support within YRT. Specifically, LEA is able to draw on resources from its current Owner's Engineer project team to dedicate to the Interim TMS Manager role. The Interim TMS Manager support function will have an immediate and close connection to the knowledge and experience base gained through LEA's extensive involvement in both the Quick Start project and proposed extensions to the balance of the YRT fleet. Given the immediate need for this resource, LEA staff are positioned such that no ramp-up of insight and skills are required. Therefore, delays and cost inefficiencies are avoided.

A member of LEA's Quick Start Owner's Engineer team is acting in the central role of Interim TMS Manager and is able to leverage available expertise of senior specialist advisors from the project team, as required.

4.4 Summary

YRT needs to be prepared to adequately manage Quick Start technology and operations upon handover from York Consortium 2002. A smooth transition could otherwise be jeopardized, leaving operations at risk of service downtime and potential negative longer-term effects on ridership demand.

It is important that YRT be able to develop expertise and direction for future transit systems or upgrades to its conventional fleet, in order to advance its quality of service. Moreover, YRT does not want to be dependent on costly outside operations contracts to service this required TMS function and control center operations.

Currently, YRT management staff are being fully utilized and therefore there are no existing staff available who have the full blend of technical skill sets to fill the function of TMS Manager at this time. Continuing to overextend YRT's present management team as an interim measure is impractical, ineffective, and will detract from their existing responsibilities.

4.5 Relationship with Information Technology Services

The TMS group will work closely with the Region's Information Technology Services (ITS) group to provide a seamless transit technology solution for transit customers, operators and management staff. In this relationship, TMS responsibilities would include

the general oversight and administration, at a systems level, of transit technology including software and hardware for Computer Aided Dispatch and Automatic Vehicle Location (CAD/AVL) systems, fare collection, scheduling, and Transit Signal Priority (TSP). This would include administration of Control Centre workstations and servers as well as administration of in-vehicle and wayside equipment.

IT Services would provide administration of the essential infrastructure supporting the transit technology including operating systems, network communications and server room, leveraging their expertise and ownership in this area. For example, provisioning of telecommunications links between the control centre and depots would clearly be the responsibility of IT Services.

Due to the integrated nature of the transit technology being implemented for the Quick Start project, there will no doubt be collaboration required between TMS and IT Services to ensure proper management of all components of the overall transit system. In addition to IT Services, responsibilities must also be coordinated with the O&M operators and support and service providers.

4.6 Relationship to Vision 2026

The establishment of a TMS section within YRT is supportive of the Region's goal relating to "Infrastructure for a Growing Region", and the action area of "making transit accessible … continuing to improve service and infrastructure for successfully integrated transit service".

5. FINANCIAL IMPLICATIONS

The Interim TMS Manager support function, provided by LEA Consulting Ltd., is required for a period beginning immediately, and extending until the appropriate personnel are hired and transitioned effectively into their respective roles. LEA will be retained under the existing Owner's Engineer assignment with MMM/LEA for the QS project.

The consultant rates for this interim support function are $19,780 per month for the lead support specialist, based on a standard Regional full-time workweek, plus an estimated $5,000 per month for senior technical advisory input, as and when required, with respect to ITS and AFC systems design, implementation, and integration processes. Taxes and expenses are not included in these rates.

It is anticipated that the new TMS Manager would not be in place until January, 2005, so there is no 2004 budget impact. Sufficient funds have been included in the draft 2005 Business Plan and Budget for this position. Once in place, the interim TMS Manager support function provided by LEA would be immediately concluded.

6. LOCAL MUNICIPAL IMPACT

Effective management of York Region's Transit Management Systems through vehicle tracking, service scheduling, dissemination of information, and safety improvements will enhance and improve transit services for all of York Region.

7. CONCLUSION

An urgent need exists for YRT to implement a TMS function and assume responsibility for transit technology management within the Region. As a first step in developing the foundation of the functional area, it is proposed that the General Manger, Transit be authorized to hire a TMS Manager and, to offset current staff demands in the interim, engage interim TMS Manager functional support to establish the definition and foundation for the TMS section. The Manager would also carry out the accumulating tasks that require immediate attention related to the Quick Start project and extensions to the balance of the YRT fleet, and assist in hiring appropriate staff resources in the future.

The Senior Management Group has reviewed this report.

(The attachment referred to in this clause is attached to this report.)