



Office of the Auditor General/ Bureau du vérificateur général

**AUDIT OF OC TRANSPO COMMUNICATION OF
CANCELLED BUS TRIPS**

2011

**VÉRIFICATION DES COMMUNICATIONS D'OC TRANSPO
RELATIVES À L'ANNULATION DE TRAJETS D'AUTOBUS**

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EXECUTIVE SUMMARY

Introduction

This audit work was requested in discussions at a meeting of the Audit Sub-Committee on January 24, 2011. This audit was conducted in conjunction with the Audit of the Scheduling Process for Bus Operators.

Background

OC Transpo is one of the City of Ottawa's largest and most complex business units. The OC Transpo fleet has over 1,000 buses and three trains that serve nearly 370,000 daily riders. The quality of OC Transpo's communications to its ridership makes an impression and influences public perception of the system's efficiency and effectiveness.

A significant customer service challenge for OC Transpo is the rationale and communication process for re-assigning in-service buses when required (i.e., mechanical failures, operator no-shows, etc.). OC Transpo passengers may experience personal inconvenience/delay when a vehicle is removed from its route to fill a higher priority bus trip on another route. Passenger complaints to OC Transpo and City Councillors have raised questions about the bus reassignment communication process.

Audit Scope

In terms of scope, the audit plan focused on the following:

1. Determine the processes and practices related to in-service bus reassignment; and,
2. An assessment of OC Transpo's communication of cancelled bus trips.

The assessment was undertaken in November 2011 over five days.

Summary of Key Findings

Management has a process in place for the reassignment of buses and the communication of cancelled trips. We have observed and confirmed with management that this process is not entirely automated and relies on human initiation and human interaction at key steps before the ridership is notified of a trip cancellation. We believe that these trip cancellations and cancellation process are common and considered acceptable in the transit industry for systems of OC Transpo's size and complexity.

The audit team recorded a total of 55 trip cancellations over five days during the monitoring period. This is a low number of cancellations relative to the over 40,000 passenger trips that OC Transpo delivered across the city in this same period.

Of these 55 trip cancellations:

- Communication was consistent in 7 instances.
- Communication was inconsistent in 40 instances.
- Due to timing of certain notifications, we were not able to confirm the consistency of communication for 8 trip cancellations and these findings are deemed inconclusive.
- Trip cancellations are consistently posted on the website and mobile website, but we did not consistently receive a text alert or e-mail.
- E-mail and text alerts are always consistent with each other. If a text alert was received, then an e-mail alert was also received for all trip cancellations. The same applies if a text alert is not received -- an e-mail is not received as well.
- The 560-1000 phone and 560560 text message methods are generally up to date and provide accurate information when we requested information from these services.

Other observations by the audit team include:

- A notable percentage (23% or 13 of the 55 trips) of trip cancellation notifications were received quite late which made it difficult to phone or text message a stop to verify the real time schedule with the schedule on the website. As noted earlier, 8 of these 13 cancellations were received so late that we could not verify their consistency through Teleride or text message.
- In three instances, the online schedule did not match the 560-1000 phone and 560560 text message real time schedules (which are expected due to the different qualities of data used by the systems).
- There were some notable delays when the notifications were posted on the website. For example, on Thursday, November 10, 2011, the Route 1 South Keys trip was cancelled at 7:53 a.m. on the mobile website (the trip started at 7:52 a.m. and ended at 8:08 a.m.). The notification was not posted on the website until 8:08 a.m.

Following the results of our observations, further investigation was conducted.

After creating two accounts on OC Transpo's website, we subscribed to receive notifications for all of the routes. Once this subscription was complete, OC Transpo's website provided a simple confirmation, "Alert notification preferences saved."

As a result of the e-mail/text alert discrepancies, we examined the two accounts which had been created and found that although we had initially subscribed to receive alerts for all 141 possible bus routes, only 126 routes had actually been registered for alerts and the system had not registered us for the other 15 routes. We subsequently determined that the e-mail/text alert discrepancies we observed

for routes 30, 41, 101 and 105 were because our initial registration of these routes to the accounts were not saved by the server.

Considering that we had created two accounts that were subscribed to 126 routes, we decided to test this apparent subscription issue using only a few routes. We created a third, new account on the OC Transpo website and attempted to subscribe only to routes 30, 41, 101, and 105. After receiving the confirmation message, we returned to the account settings and were able to confirm that routes 30, 41, 101, and 105 had not been registered to the account by the server.

The audit team raised the registration issue with OC Transpo Management during the course of the audit. Management indicated that adjustments were made to the registration system and the problem has been fixed.

Recommendations and Management Responses

Recommendation 1

Management should take immediate steps to ensure that the e-mail/text alert registration issue has been corrected and investigate/resolve the source of other discrepancies.

Management Response

Management agrees with this recommendation.

After the audit, all routes within the registration system were tested to ensure proper registration. The issue identified in the audit was corrected in Q4 2011.

Recommendation 2

Management should start immediately to regularly monitor and conduct comprehensive testing to confirm that the notifications are consistent and accurate across all of its communications tools.

Management Response

Management agrees with this recommendation.

As part of the Customer Service Platform, an independent firm will be secured through an RFP process to regularly test the different platforms and report and correct any discrepancies. It is anticipated that this will be implemented by the end of Q2 2013. This timeline is dependent on the implementation of the new Customer Service Platform and approval of funding for this initiative. A request for funding will be included in the 2013 Transit Services budget.

Recommendation 3

Management should conduct a cost-benefit analysis and implement upgrades to the computer system(s) to automate the process step of cancelled bus trip notification (on the website, mobile website, e-mail alerts, text message alerts, travel planner, and Teleride) once the Operations Centre has made the decision to cancel a bus trip.

Management Response

Management agrees with this recommendation.

After the audit, an upgrade to the aggregator software was completed and since then the 560560 SMS service has been very stable in providing next trip information. This was completed in Q3 2011. Management recognizes that automation is required to achieve efficiency and consistency across all platforms. The current IVR 560-1000 system is reaching the end of its lifecycle and will be replaced with a system that will rely on the real-time bus position database and the travel planner database, making it consistent with all existing systems. This is scheduled to be completed by the end of Q1 2013.

Conclusion

The Audit of OC Transpo Communication of Cancelled Bus Trips has documented the following:

- Management has a rationale and process in place for the reassignment of buses, which is acceptable;
- Management has a process for the communication of cancelled bus trips and follows through on this process, which is acceptable; and,
- There was an issue with the computer system for notification of cancelled bus trips that may provide the reason for ridership complaints that OC Transpo's communication of cancelled bus trips is not consistent.

Acknowledgement

We wish to express our appreciation for the cooperation and assistance afforded the audit team by management.

RÉSUMÉ

Introduction

Cette vérification a été demandée lors des discussions qui ont eu cours à la réunion du sous-comité de vérification le 24 janvier 2011. Cette vérification a été réalisée parallèlement à la vérification de la procédure d'établissement des horaires pour les chauffeurs et chauffeuses d'autobus.

Contexte

OC Transpo est une des plus grandes et des plus complexes unités de services de la Ville d'Ottawa. Le parc de véhicules d'OC Transpo compte plus de mille autobus et trois trains qui servent quotidiennement près de 370 000 usagers. La bonne impression et la perception du public à l'égard de l'efficacité et de l'efficacités du réseau reposent sur la qualité des communications d'OC Transpo avec ses usagers.

L'argumentaire pour justifier la réaffectation d'autobus en service lorsque nécessaire (p. ex. à cause d'une défaillance mécanique, de l'absence du chauffeur, etc.) et le processus pour communiquer ces informations sont des défis considérables pour le service à la clientèle d'OC Transpo. Lorsque l'on retire un véhicule de son parcours régulier pour l'affecter à un trajet de plus grande priorité sur un autre circuit, les passagers d'OC Transpo peuvent subir les inconvénients et des retards. Les plaintes des passagers à OC Transpo et aux conseillères et conseillers municipaux ont soulevé des questions concernant le processus de communication de ces réaffectations.

Portée de la vérification

La portée de cette vérification s'articulait autour des points suivants :

1. Déterminer les processus et les pratiques liées à la réaffectation des autobus en service;
2. Une évaluation du processus de communication d'OC Transpo relativement à l'annulation de trajets d'autobus.

L'évaluation s'est déroulée au mois de novembre 2011 sur une période de cinq jours.

Sommaire des principales constatations

La direction s'est dotée d'une procédure pour la réaffectation des autobus et pour communiquer l'annulation des trajets. Nous avons observé, et la direction nous l'a confirmé, que ce processus n'est pas complètement automatisée et qu'il repose sur des interventions humaines aux étapes importantes précédant la notification des usagers de l'annulation d'un trajet. Nous croyons que l'annulation de trajets et le processus d'annulation sont chose commune et sont considérés comme acceptables

dans l'industrie du transport en commun pour des réseaux de la taille et de la complexité d'OC Transpo.

L'équipe de vérification a enregistré un total de 55 annulations de trajets au cours des cinq journées de contrôle. Il s'agit d'un faible nombre d'annulations si on le compare aux quelque 40 000 trajets effectués par OC Transpo dans la ville durant cette même période.

Sur ces 55 annulations de trajets :

- Les communications concordaient dans 7 cas.
- Les communications ne concordaient pas dans 40 cas.
- À cause du moment où ont été émis certains avis, nous n'avons pas été en mesure de confirmer la concordance des communications pour 8 trajets annulés; les résultats ne sont pas concluants dans ces cas-là.
- Les annulations de trajets sont toujours affichées sur le site Web et sur les sites web mobiles, mais nous n'avons pas toujours reçu de messages textes ou de courriels pour nous informer de l'annulation.
- Les courriels et les messages textes concordaient toujours. Si un message texte était reçu, suivait alors un courriel pour toutes les annulations de trajets et si un message texte n'était pas reçu, on ne recevait pas non plus de courriel.
- Le message téléphonique (560-1000) et les messages textes (560560) sont généralement à jour et ces modes de communications fournissent des renseignements exacts aux personnes qui s'en servent.

Autres remarques de l'équipe de vérification :

- Un pourcentage important (23 p. cent ou 13 trajets sur 55) des avis d'annulation de trajets a été reçu plutôt tardivement; par conséquent, il était difficile d'appeler ou d'envoyer un message texte à l'arrêt pour comparer l'horaire en temps réel à l'horaire publié sur le site Web. Comme mentionné précédemment, 8 de ces 13 annulations ont été reçues tellement tardivement que nous n'avons pas pu vérifier leur concordance au moyen de Teleride ou d'un message texte.
- Dans trois cas, l'horaire en ligne ne concordait pas aux horaires en temps réel du message téléphone (560-1000) et du message texte (560560) (ce à quoi on peut s'attendre étant donné la différence de qualité des données utilisées par ces systèmes).
- Nous avons remarqué des retards importants dans la publication des avis sur le site Web. Par exemple, le jeudi 10 novembre 2011, l'avis de l'annulation du trajet du circuit 1 South Keys a été publié à 7 h 53 sur le site web mobile (le trajet commençait à 7 h 52 et finissait à 8 h 8). L'avis n'a pas été publié sur le site Web avant 8 h 8.

Suivant les résultats de nos observations, d'autres contrôles ont été effectués.

Après avoir créé deux comptes sur le site Web d'OC Transpo, nous nous sommes abonnés pour recevoir des avis concernant tous les circuits. Une fois notre inscription terminée, le site Web d'OC Transpo nous a envoyé cette simple confirmation « Alert notification preferences saved » [préférences en matière d'avis d'annulation sauvegardées].

Ayant observé des divergences relativement aux avis par courriel / message texte, nous avons examiné les deux comptes créés pour constater que même si nous nous étions inscrits au départ afin de recevoir tous les avis pour les 141 circuits d'autobus, seuls 126 circuits avaient effectivement été enregistrés pour des avis; le système ne nous avait pas enregistrés pour les 15 autres circuits. Par la suite, nous avons déterminé que les divergences relativement aux avis par courriel / message texte que nous avons observées pour les circuits 30, 41, 101 et 105 venaient du fait que lors de l'inscription initiale, ces circuits n'avaient pas été enregistrés dans nos comptes par le serveur.

Étant donné que nous avons créé deux comptes pour recevoir des messages textes sur 126 circuits, nous avons décidé de vérifier ce problème apparent d'enregistrement pour quelques circuits seulement. Nous avons donc créé un troisième compte sur le site Web d'OC Transpo et nous nous sommes inscrits pour seulement les circuits 30, 41, 101 et 105. Après avoir reçu le message de confirmation, nous sommes retournés aux paramètres du compte et avons été en mesure de confirmer que le serveur n'avait pas enregistré ces circuits sur le compte.

L'équipe de vérification a soulevé la question de l'enregistrement avec la direction d'OC Transpo durant le cours de la vérification. La direction nous a indiqué que des mesures correctives avaient été apportées au système d'enregistrement et que le problème était réglé.

Recommandations et réponses de la direction

Recommandation 1

La direction devrait prendre des mesures immédiates pour s'assurer que le problème d'enregistrement aux courriels et aux messages textes est réglé et elle devrait chercher/régler la cause d'autres divergences.

Réponse de la direction

La direction est d'accord avec la recommandation.

Après la vérification, tous les circuits faisant partie du système d'enregistrement ont été mis à l'essai pour s'assurer du bon fonctionnement de l'enregistrement. Le problème soulevé dans la vérification a été corrigé au 4^e semestre 2011.

Recommandation 2

La direction devrait commencer immédiatement à contrôler régulièrement et à mener des essais complets pour confirmer que les avis d'annulation concordent et sont exacts sur tous ses outils de communications.

Réponse de la direction

La direction est d'accord avec cette recommandation.

Dans le cadre de la plateforme du service à la clientèle, une firme indépendante sera engagée suivant un processus de demandes de propositions pour mener régulièrement des essais sur les différentes plateformes et soulever/corriger les divergences s'il y a lieu. Cette mesure devrait être mise en œuvre à la fin du 2^e semestre 2013. Ce calendrier est tributaire de la mise en œuvre de la nouvelle plateforme du service à la clientèle et de l'approbation du financement de cette initiative. Une demande de financement fera partie du budget 2013 du Service de transport en commun.

Recommandation 3

La direction devrait effectuer une analyse coûts-bénéfices et mettre à niveau le système informatique afin d'automatiser les étapes du processus d'avis d'annulation de trajets d'autobus (sur le site Web, sur le site web mobile, par courriels, par messages textes, dans le planificateur de trajets et sur Teleride) une fois la décision d'annuler un trajet prise par le centre des opérations.

Réponse de la direction

La direction est d'accord avec cette recommandation.

Après la vérification, une mise à niveau de l'agrégateur a été effectuée et depuis, le service 560560 SMS s'est avéré très stable pour fournir des renseignements sur les prochains trajets. Cette étape a eu lieu au 3^e semestre 2011. La direction est consciente que l'automatisation est nécessaire pour assurer l'efficacité et la concordance sur toutes les plateformes. L'actuel système IVR 560-1000 arrive à la fin de son cycle de vie utile et sera remplacé par un système qui aura recours aux données sur l'emplacement des autobus en temps réel et aux données du planificateur de trajets, ce qui lui permettra de concorder avec tous les systèmes existants. Cette étape devrait être terminée à la fin du 1^{er} semestre 2013.

Conclusion

La vérification des communications d'OC Transpo relatives à l'annulation de trajets d'autobus a permis de documenter ce qui suit :

- La direction se sert d'un argumentaire et d'un processus acceptables pour la réaffectation des autobus;
- La direction a recours à un processus acceptable pour communiquer l'annulation des trajets d'autobus et en respecte les étapes;

- Il y avait un problème d'informatique en ce qui a trait à la transmission des avis d'annulation de trajets d'autobus qui pourrait expliquer les plaintes reçues par OC Transpo des usagers concernant la non-concordance des communications entourant l'annulation des trajets d'autobus.

Remerciements

Nous tenons à remercier la direction pour la coopération et l'assistance accordées à l'équipe de vérification.

1 INTRODUCTION

This audit work was requested in discussions at a meeting of the Audit Subcommittee on January 24, 2011. This audit was conducted in conjunction with the Audit of the Scheduling Process for Bus Operators.

1.1 BACKGROUND

OC Transpo is one of the City of Ottawa's largest and most complex business units. The OC Transpo fleet has over 1,000 buses and three trains that serve nearly 370,000 daily riders. The quality of OC Transpo's communications to its ridership makes a impression and influences public perception of the system's efficiency and effectiveness. OC Transpo has deployed tools to enhance customer service and communication re: bus trips by leveraging technology such as e-mail alerts, text message alerts, and global positioning systems (GPS).

A significant customer service challenge for OC Transpo is the rationale and communication process for re-assigning in-service buses when required (i.e., mechanical failures, operator no-shows, etc.). OC Transpo passengers may experience personal inconvenience/delay when a vehicle is removed from its route to fill a higher priority "open trip" on another route. Passenger complaints to OC Transpo and City Councillors have raised questions about the bus reassignment communication process. Passengers may also experience personal inconvenience/delay when they are expecting a bus and one does not arrive, and in particular have questioned the accuracy of OC Transpo's real-time communication of cancelled bus trips.

2 AUDIT OBJECTIVES AND APPROACH

2.1 Overview of Scope and Objectives

In terms of scope, the audit plan focused on the following:

- Determine the processes and practices related to in-service bus reassignment; and,
- An assessment of OC Transpo's communication of cancelled bus trips.

Three key objectives are as follows:

1. Characterization of the events that cause bus trip reassignment/cancellation;
2. Assessment of management's process of communicating cancelled bus trips; and,
3. Documentation of real-time bus trip cancellation notification.

The audit plan includes:

- Data-based current performance assessment which is quantifiable/measurable;
- Process mapping leading to identification of improvement opportunities; and,
- A blend of quantitative and qualitative assessment tools.

The audit plan methodology components include the following:

- Structured interviews to obtain insights on situations, management's situational response, communication tools, and communication tool design (addresses all Audit Objectives);
- Metric and data driven real-time analysis of OC Transpo's communication of bus trip cancellations (addresses Audit Objective #3);
- Critical path mapping of situations and situational response (addresses all Audit Objectives); and,
- Go forward risk assessment re: communication improvement.

3 OBSERVATIONS AND RECOMMENDATIONS

3.1 ***Audit Objective 1: Characterization of Events that Cause Bus Trip Reassignment/Cancellation***

OC Transpo management supplied the audit team with the following information concerning the situations that result in bus reassignment:

The purpose of reassigning an in-service bus is to fill an open trip, typically on a high priority route. Express, School, Rural and all last trips are given the highest priority. Express customers pay a premium. Rural customers have limited service options. School trips include high school students. The last trip on any route is the only way home for many customers. The next level of priority is trips with headway greater than 15 minutes. Cancelling one of these trips results in poor customer service due to long wait times. Open trips are generated as a result of numerous on-street situations including but not limited to accidents, on-board incidents, bus mechanical breakdowns and general traffic delays.

Following receipt of this information, a series of interviews was conducted with OC Transpo management, staff in the Operations Centre, and staff in the Communications Centre. As well, observation of the Communication of Operator Bus Assignment (COBA) computer interface which is central to the communication of trip cancellations was conducted.

The audit team has identified a wide range of situations encountered at OC Transpo's that may ultimately lead to the cancellation of a scheduled bus trip. These situations include a traffic accident, vehicle breakdown, and passenger illness to name a few. OC Transpo management note that trip cancellations are not a true

measure of system performance because OC Transpo has to respond to variable circumstances in real-time that regularly necessitate the re-allocation of resources. OC Transpo management has noted that the more accurate measure of performance is “scheduled service hours delivered,” which ranged from 98.94% to 99.59% in its 2010 Annual Report.

The audit team finds these processes and practices to be acceptable.

3.2 Audit Objective 2: Assessment of Management’s Process of Communicating Cancelled Bus Trips

OC Transpo management supplied the audit team with the following information concerning their process and practice for reassignment:

To manage these open trips, Operations maintain strategically timed and placed Extras (a bus and operator with no assigned trips) that are utilized to cover trips that the originally assigned bus is unable to complete. When a priority trip needs to be covered and Extras are not available, the Control Centre will typically reassign a bus from a high-frequency route (i.e. 95, 96, 97) to the priority trip. When an Extra becomes available it will be assigned to cover a portion of the open trip that resulted from the original reassignment in order to minimize customer service disruptions.

On the matter of passenger communication in the event of in-service reassignment, OC Transpo management has reviewed the current practices with the audit team. Cancelled trips are communicated in the following way:

- Posted on the OC Transpo status alerts web page;
- Removed from the online travel planner, timetable and bus stop schedules available on the website;
- Removed from the IVR 560-1000 automated telephone schedule service; and,
- Removed from the video display schedules at Transit-way stations.

Management states that these adjustments and notifications are made as soon as the decision to cancel a trip is logged by control staff, which is typically 30-90 minutes in advance of the cancellation.

Following receipt of this information, a series of interviews was conducted with OC Transpo management, staff in the Operations Centre, and staff in the Communications Centre. As well, observation of the COBA computer interface central to the communication of trip cancellations was conducted.

The audit team has documented the following process that results in the notification of a scheduled bus trip’s cancellation:

1. An issue triggers the bus operator to notify Dispatch or the Operations Centre.

2. The Operations Centre determines the severity of the situation, whether spare resources are available, and whether the trip needs to be cancelled.
3. If the trip needs to be cancelled, then Operations Centre staff post the cancellation on the COBA electronic bulletin board.
4. Communications staff (in a separate room from the Operations Centre staff) monitor the COBA bulletin board for cancellation notices.
5. Upon seeing a cancelled trip, Communications staff update the communication tools. Updates are made to three systems in the following order:
 - a) First, the database that informs the website content, mobile website content, e-mail alerts, and text message alerts is updated;
 - b) Next, the OC Transpo Travel Planner is updated; and,
 - c) Lastly, the Teleride (i.e., 613-560-1000 phone system) is updated.
6. If the Operations Centre is able to obtain resources to partially complete a previously cancelled trip, then those resources are put in service, and a posting is made to the COBA bulletin board.
7. Upon seeing notice that a previously cancelled trip will be partially served by spare resources, then the Communications Centre staff remove the cancellation notice (by repeating process Steps 5a to 5c).

Between Steps 3 and 4 in the process, there is the slight possibility for miscommunication between the Operations Centre staff and Communication Centre staff if the COBA bulletin board is not synchronized between the two groups. However, observation of the COBA bulletin board by us has confirmed that the board is synchronized and this is not an issue.

At Step 5a in the process, management indicates that one entry to the database generates the content for the website, mobile website, e-mail alerts and text alerts (i.e., staff do not have to manually update each different communication tool). Management indicates that these four communication tools are synchronized and there should never be an instance where information on one communication tool differs from the other.

We note that the ridership receives notification of cancelled trips through Step 5a with information disseminated by the website, mobile website, e-mail alert, and text alert. For the Travel Planner and Teleride systems, the ridership is not advised explicitly that a trip has been cancelled but is instead quoted information about the next available trip; this communication is appropriate for the Travel Planner and Teleride systems.

With the need for manual initiation and involvement in the trip cancellation process, management indicates that there are a series of situational responses that influence how quickly OC Transpo can communicate the cancellation of a bus trip. These situational responses are explained below.

Bus Operator Delay in Reporting an Issue: During Step 1 of the process, OC Transpo management noted that a bus operator may not be able to report an issue immediately. For example, the bus operator may need time to personally address an issue with a passenger and some time would pass before the driver can notify the Operations Centre of a delay in service.

Resource Decision Delay at the Operations Centre: During Step 2 of the process, OC Transpo management noted that a possible issue or delay does not trigger an immediate trip cancellation. In peak periods when the system is running at full capacity, it is likely that a trip may be cancelled due to very limited spare resources; however, this is not always the case. Once staff have been notified of an issue, they have to then assess what distance remains to be served by the trip, how much time remains until the end of the trip, and whether spare resources are available to service the remainder of the trip. Furthermore, staff have to assess the current operator's schedule, the current operator's next scheduled trip, whether a spare operator is needed to fulfil the current operator's interrupted duty, and how to reassign the current on-duty operator. If appropriate, a trip is posted as a cancelled trip based on the results of this assessment.

Communications Decision Delay at the Communications Centre: During Step 5 of the process, there are a variety of situations that dictate different responses by Communications staff. If there are multiple cancellations in a short period of time, staff in the Communications Centre issue notifications based on the most time-sensitive cancellations. If there is a cancellation on a high volume route during the peak period when the next bus is scheduled to arrive soon, staff may opt to not issue a notification simply because the effect on service is negligible. If there is a cancellation with significant lead time before the trip (i.e., before the bus has left the garage) then Communications Centre staff may not issue a notice and allow time for Operations Centre staff to coordinate resources to fulfil the trip.

We have observed and confirmed with management that this process is not entirely automated and relies on manual initiation and human interaction at key steps before the ridership is notified of a trip cancellation. The need for human interaction to update three systems is due to the nature and age of the systems in place. The Teleride system is the oldest system in place; it has been operational for approximately 20 years. The Travel Planner tool is linked to the Hastus scheduling software that OC Transpo uses to build its quarterly service schedules. The COBA database that informs the website, mobile website, e-mail alerts, and text alerts is a system that was developed in-house. OC Transpo management indicates that work

is underway to automate Step 4 and Step 5 in the process through additional computer resources.

The potential for delays in the process (from the time that an issue occurs to the time that a cancellation notice is issued) is expected. As noted above, there are situations when a bus operator is not able to advise the Operations Centre of a delay. The role of the Operations Centre staff is to manage resources in real-time and their involvement is necessary in the process of trip cancellations. The role of the Communications Centre staff is to provide timely and useful information to the ridership and their involvement is also considered important. Overall, management expects that the average time lapse in the process is a few minutes and aspects under their full control are dealt with expeditiously.

We believe that these trip cancellations, cancellation process, and time lapses are common and considered acceptable in the transit industry for systems of OC Transpo's size and complexity.

There is minimal to no impact or risk to the City of Ottawa or the ridership related to the process of cancelling scheduled trips. This is a function of the real-time management of the system by OC Transpo staff. An acceptable process is in place and is being followed.

The system could be more efficient by introducing automation to help streamline one step in the process.

3.3 Audit Objective 3: Documentation of Real-Time Bus Trip Cancellation Notification

As part of our approach, we have monitored cancelled bus trips during morning and afternoon peak periods over five days, and undertaken an analysis of the communication of cancelled bus trips relative to OC Transpo's communication process and rider interfaces.

3.3.1 Monitoring Approach

In preparation for the audit, a search was conducted on OC Transpo's website to determine the various ways that OC Transpo could communicate cancelled trips to its riders. The following methods were identified:

- Website: riders can visit OC Transpo's website to view updates about cancelled trips
- Mobile website: riders can visit a mobile-phone enhanced version of OC Transpo's website to view updates about cancelled trips
- E-mail alerts: riders can subscribe to receive alerts about cancelled trips sent to their e-mail address
- Text message alert: riders can subscribe to receive alerts about cancelled trips sent to their cell phone

- 613-560-1000 phone (“Teleride”): riders can call the Teleride system and provide a four digit bus stop code and the computer will advise when the next three trips are scheduled
- 560560 text message: riders can send a text and four digit bus stop code by SMS text message and the computer will advise by text message when the next three buses are expected to arrive

We understand through discussion with OC Transpo management that the 560560 system is unique from the other communication tools. The 560560 is based on the global positioning system (GPS) on the vehicle and uses GPS data to provide a predicted time of arrival at a given bus stop in real-time. This information is different from the other communication tools that provide information to the ridership based on OC Transpo’s schedules, rather than real-time. However, we believe that the ridership does not see 560560 as different from the other communication tools; rather, we believe that the ridership expects all communication from OC Transpo to be consistent, and therefore we have included 560560 in the audit.

Specific time periods were selected for monitoring communications. These time periods were chosen because they are the times in which OC Transpo experiences the highest ridership demand and it is expected that the majority of cancellations would occur during these time periods. The following time periods were chosen for monitoring (“monitoring period”):

- AM Peak – 7:30 a.m. – 8:30 a.m.
- PM Peak – 3:00 p.m. – 4:30 p.m.

During the monitoring stage, all of the notification methods identified above were monitored to determine the consistency of notification across these sources. To replicate a rider’s use of communication methods, two types of monitoring were undertaken, fixed interval monitoring and notification-based monitoring:

- Fixed Interval Monitoring: During the monitoring period, the website and mobile website were monitored at fixed intervals, to replicate the rider’s behaviour of checking the website or mobile website for a trip cancellation. These websites were monitored generally every 15 minutes during the monitoring period. If a trip cancellation was identified during the interval then the other methods of communication were checked to determine whether communication was consistent for the other notification methods.

- Notification-Based Monitoring: During the monitoring period, e-mail notifications and text message alerts were monitored to replicate the rider's behaviour of subscribing to these alerts. We created two accounts on OC Transpo's website. The first account was registered with an e-mail address and cell phone number to receive alerts. We registered a second e-mail address as a quality control check¹. If an alert was received for a trip cancellation then the other methods of communication were checked to determine whether communication was consistent for all notification methods.

When a trip cancellation was identified, we also checked the Teleride phone service and 560560 text message service on the cancelled route to observe how these systems were being updated. To do this, we reviewed the bus schedule for the cancelled trip, identified a future stop that would not be served because the trip was cancelled, and then phoned 613-560-1000 and sent a text message to 560560 to obtain feedback from these systems.

3.3.2 Observations

The audit team recorded a total of 55 trip cancellations over five days during the monitoring period. This is a low number of cancellations relative to the over 40,000 passenger trips that OC Transpo delivered across the city in this same period.

Of these 55 trip cancellations:

- Communication was consistent in 7 instances;
- Communication was inconsistent in 40 instances; and,
- Due to timing of certain notifications, we were not able to confirm the consistency of communication for 8 trip cancellations and these findings are deemed inconclusive.

Some common observations are:

- Trip cancellations are consistently posted on the website and mobile website, but we did not consistently receive a text alert or e-mail. For example, on Wednesday, November 9, 2011 a trip cancellation was identified for Route 111 at 7:50 a.m. on the website and mobile website. However, a text alert or e-mail was not received.
- E-mail and text alerts are always consistent with each other. If a text alert was received, then an e-mail alert was also received for all trip cancellations. The same applies if a text alert is not received -- an e-mail is not received as well. For example, on Tuesday, November 8, 2011, a text alert was received at 7:36 a.m. for an 86X trip cancellation and an e-mail was received at the same time.

¹ The first e-mail address used a web-based e-mail system, while the second account used a server-based e-mail system. We have confirmed that the number of e-mails received during the monitoring period was the same for both accounts.

- The 560-1000 phone and 560560 text message methods are generally up to date and provide accurate information when we requested information from these services. For example, on Thursday, November 10, 2011, a trip cancellation for Route 96 Airport was reported at 4:06 p.m. Both the 560-1000 phone and 560560 text message methods had updated schedule information.

Some other issues that we identified during the monitoring stage include:

- A notable percentage (23% or 13 of the 55 trips) of trip cancellation notifications were received quite late which made it difficult to phone or text message a stop to verify the real time schedule with the schedule on the website. For example, on Friday, November 11, 2011, at 8:27 a.m. the route 30 Downtown trip was cancelled from Millennium Station 7:37 a.m. to Lebreton Station 8:32 a.m. This notification was received with only five minutes remaining in the bus trip. As noted earlier, 8 of these 13 cancellations were received so late that we could not verify their consistency through Teleride or text message.
- There was a minor error in reporting one cancellation. On Wednesday, November 9, 2011, at 7:30 a.m. the following cancellation appeared on the mobile website and website: "35x Lebreton/Downtown - Cancelled trip: The trip starting at (intersection of Tenth Line Rd and Harvest Valley Ave 7:43 a.m.) is cancelled from intersection of Tenth Line Rd and Harvest Valley Ave 7:43 a.m. to Lebreton Station 8:41 a.m.". The e-mail notification received for this trip was labelled as "41x Downtown."
- In three instances, the online schedule did not match the 560-1000 phone and 560560 text message real time schedules. For example, the trip cancellation at 7:54 a.m. on Wednesday November 9, 2011 indicated that the 95x Hurdman trip was cancelled from Westboro Station to Hurdman Station. The text message response indicated the bus would arrive at 8:04 a.m.; 8:08 a.m.; and 8:11 a.m. The schedule on OC Transpo's website identifies trips arriving at Hurdman at 8:05 a.m.; 8:08 a.m.; 8:09 a.m.; and 8:12 a.m.
- There were some notable delays when the notifications were posted on the website. For example, on Thursday, November 10, 2011, the Route 1 South Keys trip was cancelled at 7:53 a.m. on the mobile website (the trip started at 7:52 and ended at 8:08 a.m.). The notification was not posted on the website until 8:08 a.m.

- We also found one inconsistency for notification on a specific route. On November 9, 2011, a text and e-mail alert were received for the 95x Hurdman Trip cancellation from Westboro Station 7:53 a.m. to Hurdman Station 8:12 a.m. However, on the same day at 4:00 p.m., the 95 Orleans trip from the Tunney's Pasture Station 4:30 p.m. to the Orleans Station 5:08 p.m. was cancelled and no text or e-mail alert was received.²

The audit team has observed that the website, mobile website, 613-560-1000 Teleride, and 560560 are the methods that appear to work the best for consistent communication of bus trip cancellations. The text and e-mail alert methods were not as reliable.

Following the results of our observations, further investigation was conducted. Unlike the other methods of communication, we understand that a rider has to subscribe to receive e-mail alerts and text message alerts. This process requires that the rider create an account on OC Transpo's website and then select the routes for e-mail/text alerts.

The audit team was advised previously by OC Transpo staff that the server that manages the e-mail/text alerts is large enough to handle the load of data communications. We were also advised by OC Transpo staff that – although it would be unusual – a rider could sign up to receive alerts for all routes and the system would not restrict the rider from doing so.

After creating two accounts on OC Transpo's website, we subscribed to receive notifications for all of the routes. Once this subscription was complete, OC Transpo's website provided a simple confirmation, "Alert notification preferences saved."

As a result of the e-mail/text alert discrepancies, we examined the two accounts which had been created and found that although we had initially subscribed to receive alerts for all 141 possible bus routes, only 126 routes had actually been registered for alerts and the system had not registered us for the other 15 routes. We subsequently determined that the e-mail/text alert discrepancies we observed for routes 30, 41, 101 and 105 were because our initial registration of these routes to the accounts were not saved by the server.

Considering that we had created two accounts that were subscribed to 126 routes, we decided to test this apparent subscription issue using only a few routes. We created a third, new account on the OC Transpo website and attempted to subscribe only to routes 30, 41, 101, and 105. After receiving the confirmation message, we returned to the account settings and were able to confirm that routes 30, 41, 101, and 105 had not been registered to the account by the server. The screenshots below provide a clear demonstration of this issue.

² Although the route numbers are slightly different – 95X and 95 – the rider is only given the option of subscribing to Route 95 notifications.

Step 1: New user account created and no routes selected yet

The screenshot shows the OC Transpo website interface. At the top, there is a navigation bar with the date 'Tuesday 22 November 2011' and language options 'Français | Mobile'. The OC Transpo logo is prominently displayed on the left. Below the logo is a menu with options: 'HOME', 'LIVE TRANSIT UPDATES', 'TICKETS/PASSES', 'ROUTES & MAPS', 'DISCOVER OTTAWA', and 'COMMUNITY EVENTS'. A secondary menu includes 'MAPS', 'SCHEDULE', and 'QUICK PLANNER'. The main content area is titled 'Change My Alerts' and contains a form for managing alerts. The form includes a list of actions on the left: 'Change My Alerts', 'Cancel Alerts', 'Change Password', 'Update Email Address', 'Update Phone Number', 'Help', 'Privacy Policy', and 'Logout'. The main form area has a heading 'Change My Alerts' and a sub-heading 'Please fill out the form provided below to receive alerts from OC Transpo.' It features checkboxes for 'by email' (checked) and 'by SMS (-)'. A 'Preferred language' dropdown is set to 'English'. Under 'Categories', there are checkboxes for 'Cancelled Trips', 'Detours', 'Route service change', 'General service change', 'News', and 'Elevators'. Under 'Routes', there is a dropdown menu with 'Add Route' and a plus sign button. At the bottom of the form, there is a 'CONTINUE' button and a link to 'Unsubscribe from alerts'. The footer contains a search bar, the OC Transpo logo, and logos for 'octranspo.mobi', 'Para Transpo', and 'TRANSITWAY'.

Step 2: User requesting e-mail alerts for routes 30, 41, 101, and 105

Tuesday 22 November 2011

Français | Mobile | S

OC Transpo

HOME LIVE TRANSIT UPDATES TICKETS/PASSES ROUTES & MAPS DISCOVER OTTAWA COMMUNITY EVENTS

MAPS SCHEDULE QUICK PLANNER

Change My Alerts

Please fill out the form provided below to receive alerts from OC Transpo.

by email by SMS (-)

Preferred language: English

Categories:

- Cancelled Trips
- Detours
- Route service change
- General service change
- News
- Elevators

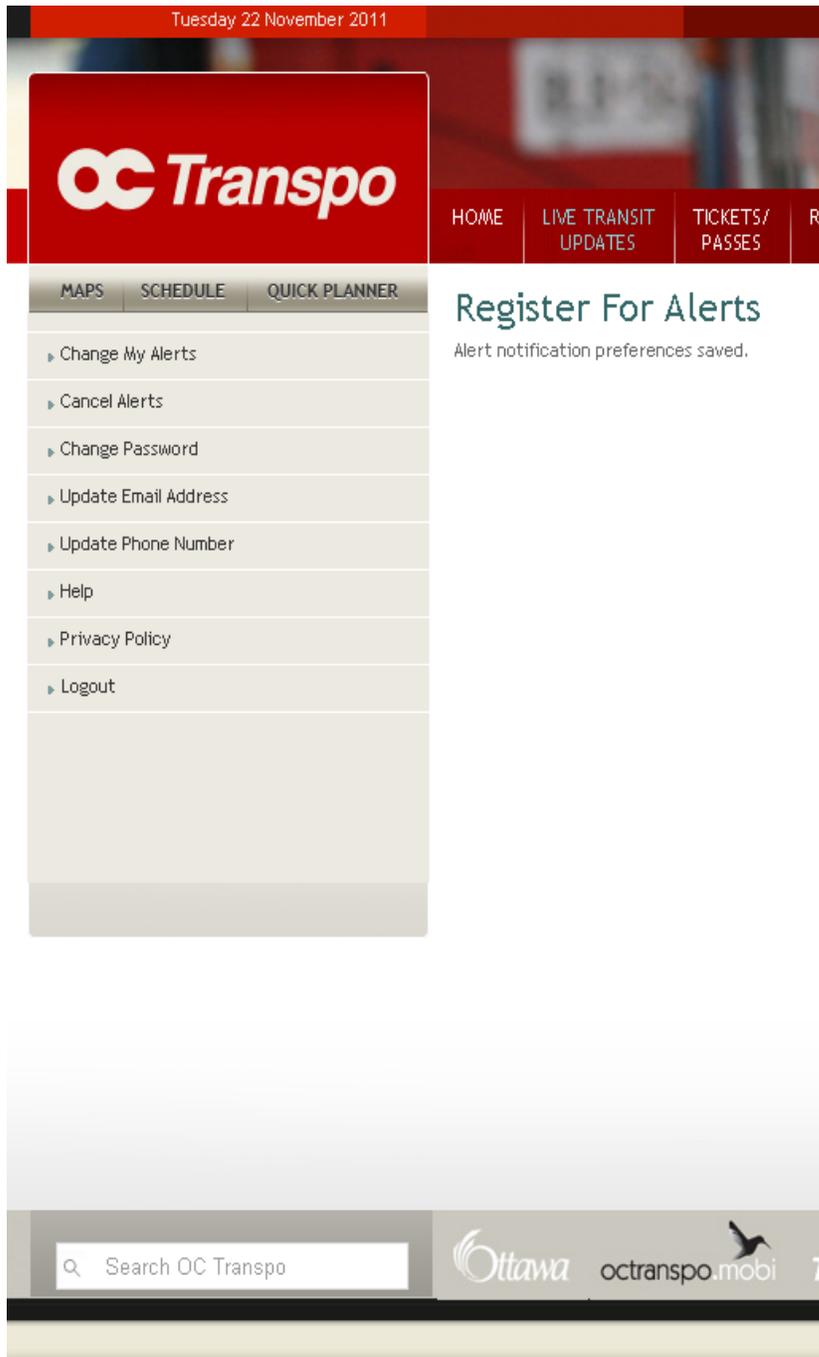
Routes:

- 30
- 41
- 101
- 105

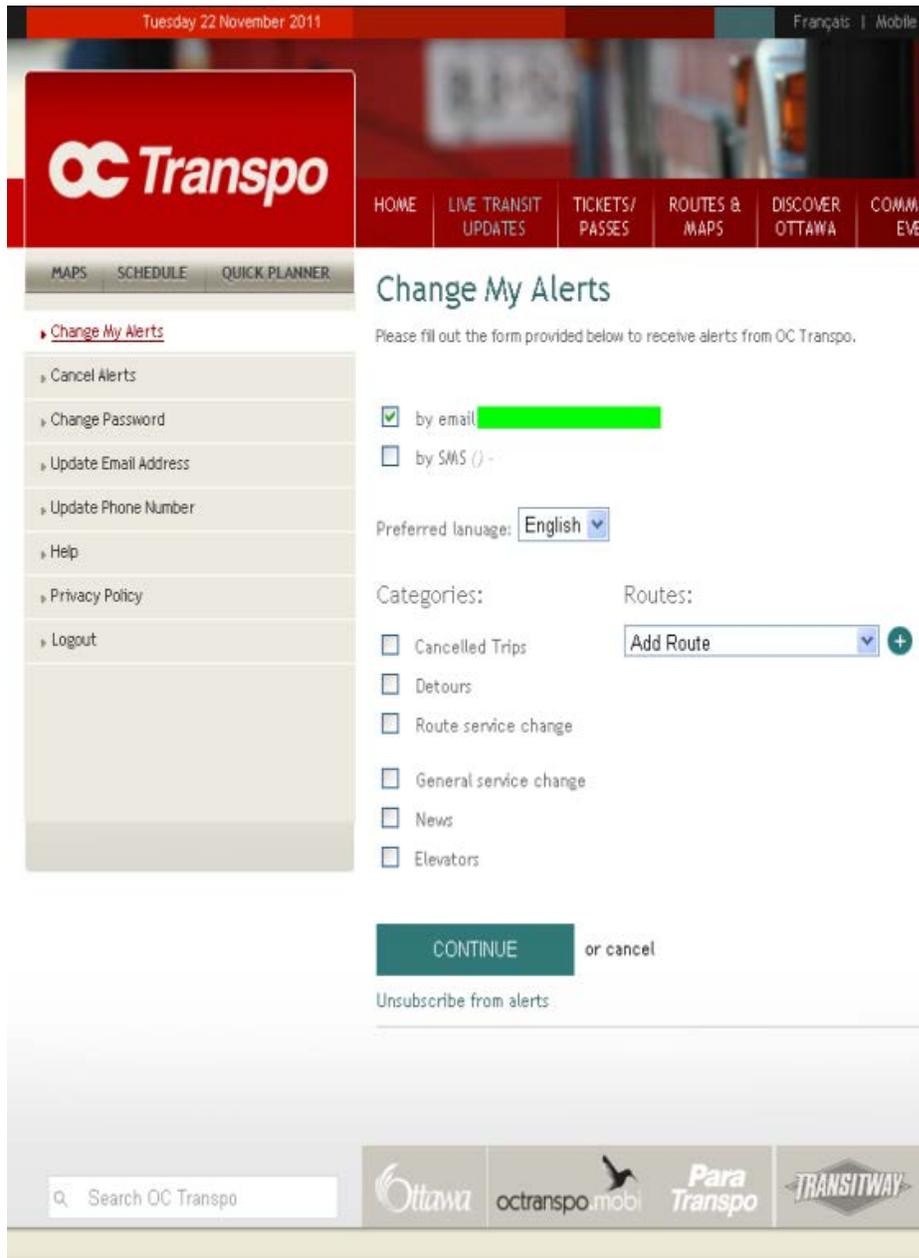
CONTINUE or cancel

[Unsubscribe from alerts](#)

Step 3: Confirmation screen suggesting that the routes are registered



Step 4: Revisiting the account confirms that the routes are not registered



The audit team believes that this subscription issue may provide the reason for ridership complaints that OC Transpo's communication of cancelled bus trips is not consistent. The experience of the rider is likely that of ours – the rider has registered for e-mail/text notifications, believes that the registration is valid because a confirmation was received, but then receives mixed results from e-mail/text alerts depending on the routes selected by the rider. Furthermore, since the rider believes that the registration is valid and would likely have no reason to suspect an issue with their registration, the complaints being received are that OC Transpo's communication of cancelled trips is not consistent.

We note that this subscription issue does not explain all of the discrepancies – we observed that e-mail/text alerts were received in the morning for Route 95 and not received in the afternoon – but it does suggest that the source of the issue is internal to OC Transpo's computer system.

The audit team raised the registration issue with OC Transpo Management during the course of the audit. Management indicated that adjustments were made to the registration system and the problem has been fixed.

As noted earlier, the 560560 service works differently than the other services and is based on real-time GPS data and a predicted time of arrival (unless real-time data is not available in which case the system responds with the bus schedule). The few minor discrepancies between the scheduled-based systems and the 560560 system are expected due to the different qualities of data used by the systems.

It appears that there was a problem with the e-mail/text alert registration system used by OC Transpo to communicate trip cancellations to its riders. There are many consequences to not ensuring that this problem has been fixed. First, OC Transpo risks damaging the strong positive rating (73% positive response from transit users on customer satisfaction in the 2010 Annual Report) that it has worked hard to achieve over time. A reliability and trust issue also arises, with the risk that riders might perceive OC Transpo's information as unreliable and therefore begin to question all information that they receive about the system, broadening the gap between OC Transpo's actual delivery of good service and a rider's possible perception of poor service.

Considering the potential significance of this issue – for example, Route 101 alone serves a sizeable portion of the municipality from Bayshore, through downtown, to St. Laurent – and that the computer interface has been designed using City IT resources rather than an off-the-shelf solution, concerns may be raised about the quality/viability of all other City-designed IT applications delivered to citizens. There is a risk that citizens may perceive any City service delivered through an IT portal in a negative light and opt not to use them. This could negatively impact citizen self-service through City IT portals, which is a key tool for long-term efficiency and cost-effective delivery of Ottawa's municipal services.

Finally, we are concerned that this issue could contribute to increased frustration of riders and some riders opting for other modes of transportation, with a longer-term impact of reduced transit ridership.

Recommendation 1

Management should take immediate steps to ensure that the e-mail/text alert registration issue has been corrected and investigate/resolve the source of other discrepancies.

Management Response

Management agrees with this recommendation.

After the audit, all routes within the registration system were tested to ensure proper registration. The issue identified in the audit was corrected in Q4 2011.

Recommendation 2

Management should start immediately to regularly monitor and conduct comprehensive testing to confirm that the notifications are consistent and accurate across all of its communications tools.

Management Response

Management agrees with this recommendation.

As part of the Customer Service Platform, an independent firm will be secured through an RFP process to regularly test the different platforms and report and correct any discrepancies. It is anticipated that this will be implemented by the end of Q2 2013. This timeline is dependent on the implementation of the new Customer Service Platform and approval of funding for this initiative. A request for funding will be included in the 2013 Transit Services budget.

Recommendation 3

Management should conduct a cost-benefit analysis and implement upgrades to the computer system(s) to automate the process step of cancelled bus trip notification (on the website, mobile website, e-mail alerts, text message alerts, travel planner, and Teleride) once the Operations Centre has made the decision to cancel a bus trip.

Management Response

Management agrees with this recommendation.

After the audit, an upgrade to the aggregator software was completed and since then the 560560 SMS service has been very stable in providing next trip information. This was completed in Q3 2011. Management recognizes that automation is required to achieve efficiency and consistency across all platforms. The current IVR 560-1000 system is reaching the end of its lifecycle and will be replaced with a system that will rely on the real-time bus position database and the travel planner database, making it consistent with all existing systems. This is scheduled to be completed by the end of Q1 2013.

4 CONCLUSION

The Audit of OC Transpo Communication of Cancelled Bus Trips has found the following:

- Management has a rationale and process in place for the reassignment of buses, which is acceptable;
- Management has a process for the communication of cancelled bus trips and follows through on this process, which is acceptable; and,
- There was an issue with the computer system for notification of cancelled bus trips that may provide the reason for ridership complaints that OC Transpo's communication of cancelled bus trips is not consistent.

5 ACKNOWLEDGEMENT

We wish to express our appreciation for the cooperation and assistance afforded the audit team by management.