



4.4.

SÉCI, STOP+ AND GESOUR APPLICATION MANAGEMENT

MARCH 14, 2019

SUMMARY OF THE AUDIT

OBJECTIVE

Determine whether the controls put in place for the SÉCI, STOP+ and Gescour applications can ensure their reliability, data integrity and compliance with applicable statutes.

RESULTS

In addition to these results, we have formulated various recommendations for business units.

The details of these recommendations and our conclusion are outlined in our audit report, presented in the following pages.

Note that the business units have had the opportunity to formulate their comments, which appear after the audit report recommendations.

Based on our audit work, we conclude that the City's electronic ticketing system (SÉCI), criminal offence processing system (STOP+) and Gescour are technologically obsolete and that the City also has to deal with human resource succession issues. This situation and gaps in access rights management and change management make it difficult to keep these applications running and pose a data reliability and integrity risk.

Because they are obsolete, the STOP+ and Gescour applications are very difficult to adapt and, under the circumstances, they cannot meet the fine collector's enforcement of judgment needs. This situation makes it difficult to recover sums due to the City. These applications manage an important source of revenue (\$172.8 million in 2017).

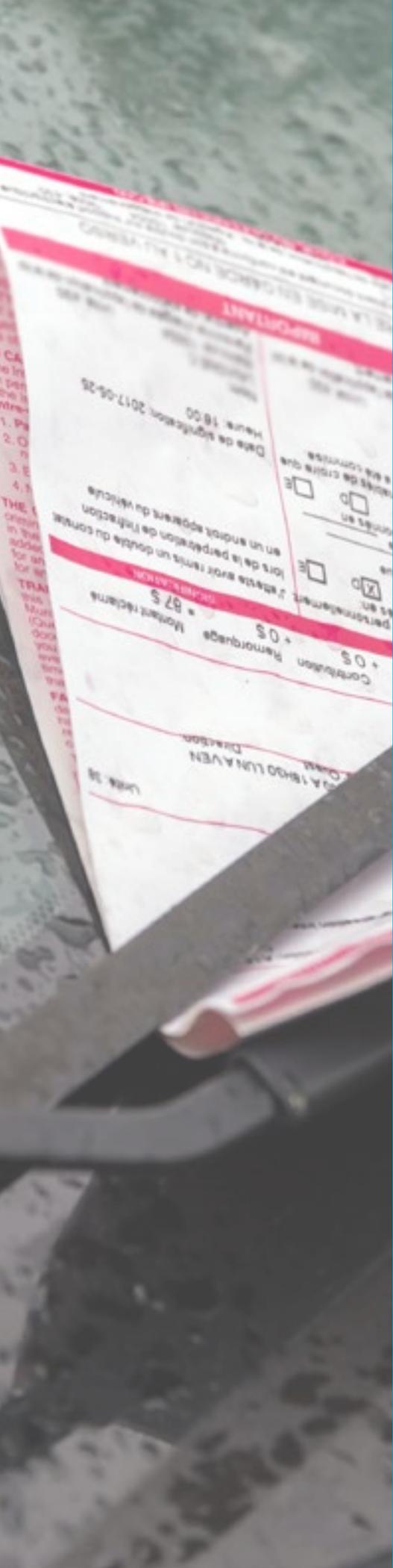
With respect to the legal and regulatory watch, because STOP+ and Gescour are obsolete and there is no human resource succession action plan, changes arising from the new 2016 *Code of Civil Procedure* have not yet all been integrated into STOP+ and Gescour.

We also noted the following:

- Roles and responsibilities regarding the management of STOP+ and Gescour and their owners have not yet been formalized;
- Logical access management for SÉCI, STOP+ and Gescour is not routinely documented. Some users who do not have administrative authorization have been granted access rights to STOP+ and Gescour to enter the withdrawal of a ticket;
- A Change Advisory Board is in place to help manage changes to SÉCI, STOP+ and Gescour. Approval of change requests for STOP+ and Gescour are not routinely documented;
- The successors identified for SÉCI have not yet been trained, and the successors identified for Gescour are in the knowledge transfer phase.

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LIST OF ACRONYMS

CAB

Change Advisory Board

Géobase

geospatial data on Montréal roads

NCCP

new *Code of Civil Procedure*

PDA

personal digital assistant

PEO

parking enforcement officers

RACI

responsibility matrix (responsible, approver, consulted, informed)

SAAQ

Société de l'assurance automobile du Québec

SAJ

Service des affaires juridiques

SÉCI

electronic ticketing system

SIGEP

Système intégré de gestion des effectifs policiers [Integrated police management system]

SPVM

Service de police de la Ville de Montréal [Ville de Montréal Police Department]

STI

Service des technologies de l'information [Information Technology Services]

STM

Société de transport de Montréal

STOP+

criminal offence processing system

TCEP

three-year capital expenditures program

VPN

virtual private network

1. BACKGROUND

From its beginnings, in August 1851 until now, the municipal court of the Ville de Montréal (the City) is one of the most important courts in Canada. It has jurisdiction over the Island of Montréal including the City, the 19 boroughs and the 15 related municipalities of the Montréal agglomeration. It hears cases involving civil and criminal law. Every year, 2 million cases are filed, making it the 3rd largest court in North America after the Los Angeles Superior Court and the Superior Court of the District of Columbia (Washington).

The Service des affaires juridiques' (SAJ) mission includes:

"...ensuring that the population of the Montréal agglomeration receives the services of an accessible, modern and efficient municipal court whose objective is to provide justice for all citizens of the Island of Montréal".

Available legal services include processing tickets which are defined as follows:

"...document by which a public officer, usually a police officer, certifies that an offence has been committed. The form and content of tickets are governed by regulations pursuant to the Code of Penal Procedure ²".

The municipal court's criminal jurisdiction includes violations of Acts and regulations as well as violations of the *Highway Safety Code* and the *By-law concerning traffic and parking*. Police officers have the exclusive power to issue tickets relating to the *Highway Safety Code* for moving vehicles. With respect to issuing tickets relating to the parking bylaw (and only for offences under the *Highway Safety Code* related to parking pursuant to section 576), parking enforcement officers (PEO), police cadets and private sector PEO, who work for the parking enforcement section of the Service de police de la Ville de Montréal (SPVM), are also authorized to issue them. The main computer applications used to process tickets relating to the *Highway Safety Code* and the *By-law concerning traffic and parking* are the electronic ticketing system (SÉCI) and the criminal offence processing system (STOP+).

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- 1 Official portal: Ville de Montréal Service des affaires juridiques.
http://ville.montreal.qc.ca/portal/page?_pageid=5798,141980230&_dad=portal&_schema=PORTAL
 - 2 Thésaurus de l'activité gouvernementale – fiche du terme constat d'infraction.
<http://www.thesaurus.gouv.qc.ca/tag/terme.do?id=3179>

According to the financial statements, revenue from traffic safety, traffic and parking violations for the 2017 fiscal year was \$154.9 million. The table below presents financial data on tickets issued for these types of offences:

TABLE 1 – TRAFFIC SAFETY, TRAFFIC AND PARKING TICKETS

	2017	2016	2015
Revenue in thousands of dollars (according to 2017 financial reports)	\$154,959	\$147,309	\$156,705
Number of tickets issued (according to the activity report prepared by the Division de la perception and the Service à la clientèle)	1,787,088	1,806,633	1,802,243

The SAJ also looks after issuing tickets for criminal and civil offences other than traffic, parking and *Highway Safety Code* violations. Depending on the offence for which the ticket was issued, the court process has its own rules and follows a specific sequence. Gescour, the computerized municipal court minute book, is the application used to manage the entry, processing and subsequent payment of tickets. For other Acts and regulations, the person authorized to issue a ticket is identified in accordance with the Act, the bylaw in question or by a City resolution such as resolution CE14 0234.

Here are some financial data on tickets issued by Gescour in 2017:

TABLE 2 – TICKETS OTHER THAN TRAFFIC AND PARKING TICKETS

	2017	2016	2015
Revenue in thousands of \$ (according to 2017 financial reports) ³	\$17,854	\$16,424	\$14,050
Number of statements issued (according to the activity report prepared by the Division de la perception and the Service à la clientèle)	30,973 ⁴	42,056	33,183

³ Revenues include non-significant amounts from library fines.

⁴ The number of tickets was discussed in a note in the 2012 to 2017 Activity Report prepared by the Division de la perception and the Service à la clientèle. It indicates that "*the number of tickets is partial (...) this number will be modified when the patches have been installed*".

ELECTRONIC TICKETING SYSTEM APPLICATION

The SÉCI application, for which the SPVM is responsible, was introduced in 2007. It is used to issue electronic tickets. Application updates and support are provided by the Service des technologies de l'information (STI) and the software provider.

Parking enforcement officers (PEO), cadets and police officers who work for the SPVM issue electronic traffic and parking tickets. They use various devices to issue tickets including a computer in the vehicle or a mobile workstation, heavy-duty tablets for motorcycle police officers, the stationary workstation at the local police station and a personal digital assistant (PDA) for PEO.

When enforcement staff return to the office, the PDAs are connected to the server and they send reports issued to SÉCI. When a user opens a work session, a series of ticket numbers is generated and assigned by the application. At the end of the session, unused report numbers are returned to SÉCI and these numbers will be used later by the application when another session is opened, causing temporary breaks in the digital sequence of tickets issued.

Once a ticket is completed and issued, it can be cancelled in two ways:

- Status spoiled: a ticket that has not been served (not delivered to the offender) and must be cancelled due to an error, for example. The author files a request to spoil the ticket. The author's supervisor must also approve it in SÉCI;
- Status withdrawn: a ticket that has been served (delivered to the offender) and must be cancelled as a result of an error (e.g. wrong street name). The author of the ticket completes a withdrawal request, which provides the rationale for the request. The withdrawal request is sent to his supervisor who approves it in SÉCI and sends it to the court for final approval.

From Monday to Thursday, SÉCI data are sent to STOP+ for further processing.

CRIMINAL OFFENCE PROCESSING SYSTEM APPLICATION

STOP+ is an application developed by the City in 1992 for which the SAJ is responsible. It is hosted within the legacy system. STI develops and supports the application.

This application is used to manage the court's ticket records. It is used to view and enter the status of offence records⁵, the execution of court decisions, payment processing and the transfer of financial data to the accounting application.

⁵ For example, the variables entered describe the events (e.g., "ticket", "prosecution instruction", "application hearing", "pleading") and the status of the record regarding the event indicated (e.g., "judgment – guilty", "judgment – acquitted", "boot placed on vehicle").

Under certain conditions, the prosecutor may withdraw a ticket that has been served on an offender, for example following an investigation. Tickets withdrawn before judgment are reviewed by a Direction des services judiciaires du SAJ team. They are then submitted to the prosecutor for approval, along with supporting documents. Afterwards, withdrawal of the ticket is recorded in STOP+ by entering the event and the status at issue.

GESCOUR APPLICATION

Gescour is an application developed by the City in 1997, for which the SAJ is responsible. It is hosted within the legacy system. STI develops and supports the application.

Gescour generally has the same functionalities as STOP+ but deals with offences not governed by the *Highway Safety Code* or the *By-law concerning traffic and parking*, for example, violations governed by:

- the *Criminal Code* (examples of offences: public mischief, reckless driving);
- the Compilation of Québec Laws and Regulations (e.g., the *Regulation respecting food, Act respecting transportation services by taxi, Tobacco Control Act*);
- borough bylaws (e.g., noise, fencing, dog and other animal control bylaws, nuisance, construction, zoning);
- City bylaws (e.g., sanitation, pesticides, construction and processing, use of drinking water).

There are three types of Gescour records:

- Those concerning criminal cases: includes electronic and paper tickets (used when the case is complex);
- Those concerning criminal cases;
- Those concerning civil cases.

Paper tickets are issued by various issuing departments in accordance with their jurisdictions (e.g., SPVM, Société de transport de Montréal (STM), the 13 departments, the 19 boroughs and the 15 related cities). These tickets are sent to the municipal court office. The data are entered in Gescour and the ticket is also scanned.

Tickets processed in Gescour can also be withdrawn. The department that issued the ticket sends a rationale. The Direction des services judiciaires du SAJ's team first reviews the rationale. It is then submitted to the prosecutor for approval, along with supporting documents. Afterwards, withdrawal of the ticket is recorded in STOP+ by entering the event and the status at issue.

In terms of future STOP+ and Gescour updates, a paperless integrated court project known as “Digital Court” has been announced. The project is currently in the business architecture development phase. There are plans to update SÉCI to a newer version in 2019.

2. PURPOSE AND SCOPE OF THE AUDIT

Determine whether controls put in place for the SÉCI, STOP+ and Gescour applications can ensure their reliability, data integrity and compliance with applicable statutes.

The role of the Auditor General of the Ville de Montréal is to provide a conclusion regarding the purpose of the audit. To do so, we have collected a sufficient amount of relevant evidence on which to base our conclusion and to obtain a reasonable level of assurance. Our evaluation is based on criteria we have deemed valid for the purposes of this audit. These are set out in the appendix.

The Auditor General of the Ville de Montréal applies the *Canadian Standard on Quality Control (CSQC) 1*, of the CPA Canada Handbook – Assurance and, consequently, maintains a comprehensive quality control system that includes documented policies and procedures with respect to compliance with ethical guidelines, professional standards and applicable legal and regulatory requirements. She also complies with regulations on independence and other ethical guidelines of the *Code of Ethics of Chartered Professional Accountants*, which is governed by fundamental principles of integrity, professional competence, diligence, confidentiality and professional conduct.

Our audit was conducted from September 8, 2017, to March 4, 2019. The work consisted of conducting interviews with personnel, examining various documents and conducting surveys we considered appropriate with a view to obtaining probative information.

Upon completing our audit work, we presented a draft audit report to the managers of each of the audited business units for discussion purposes. The final report was then forwarded to the city manager and each business unit involved in the audit in order to obtain action plans and implementation timelines.

3. AUDIT RESULTS

3.1. ROLES AND RESPONSIBILITIES

3.1.A. BACKGROUND AND FINDINGS

A responsibility matrix (responsible, approver, consulted, informed) (RACI) is used to clarify stakeholders’ roles and responsibilities in a process and its activities. This tool is also

used to define the level of commitment. This is what the acronym means:

- R = responsible, the one who does the work to complete the task;
- A = approver, the one who reports on successful completion of the task;
- C = consulted, the one who provides his contribution;
- I = informed, the one who receives the information.

A RACI becomes particularly useful when application management activities are shared across several business units. In addition, if applications are changed, a RACI is used to better identify the impacts on each person's tasks and responsibilities and to make the necessary changes.

The business units involved in managing the STOP+ and Gescour applications are STI and SAJ. STI and SPVM are involved in managing SÉCI. Decisions regarding updating these applications and their functionalities have a real impact on users or the data used by SAJ, SPVM, the Service des finances, those who issue tickets (e.g., the Service des incendies, Bureau de la salubrité des logements, Bureau de taxi, STM), the boroughs and even related cities because the Division pénale de la Cour municipale serves them. With so many users who have legitimate needs, it is all the more important to ensure consistent decisions on upgrading the SÉCI, STOP+ and Gescour applications and to avoid change management errors.

When a RACI is created, it is crucial that the owner of an application and its data be identified because he will become the main approver. The application owner role makes it possible to ensure governance over updates and to avoid decisions being made without all the information and full accountability.

During our work, we noted the following:

- There are no formalized roles and responsibilities or RACIs for managing the SÉCI, STOP+ and Gescour applications;
- Owners of the SÉCI, STOP+ and Gescour applications are not formally identified. The SÉCI owner is in the process of being appointed, and there is a great deal of speculation as to who will be the owners of STOP+ and Gescour.

We believe that SAJ, STI and SPVM are still exposed to risk. Without defined, approved and communicated roles and responsibilities for SÉCI, STOP+ and Gescour, business unit stakeholders' ability to discuss, share, cooperate and coordinate their work, initiatives and responses would be significantly reduced.

The lack of formal application owner would affect decision-making. This could mean that the target applications may not work as well as they should and may no longer meet user needs.

RECOMMENDATIONS

- 3.1.B. We recommend that the Service de police de la Ville de Montréal:**
- appoint an owner of the electronic ticketing system application;
 - work with the Service des technologies de l'information to develop a responsibility matrix for managing the electronic ticketing system application.
- 3.1.C. We recommend that the Service des affaires juridiques:**
- appoint an owner for the criminal offence processing system application and an owner of the Gescour application;
 - work with the Service des technologies de l'information to develop a responsibility matrix for managing the criminal offence processing system and Gescour applications.

BUSINESS UNITS' RESPONSES

- 3.1.B. Service de police de la Ville de Montréal**
[TRANSLATION] The owner will be the Section sécurité routière commander. (Planned completion: immediately)
- A table will be created to identify the stakeholders who look after the various SÉCI management activities. (Planned completion: September 2019)*
- Service des technologies de l'information**
[TRANSLATION] The Service des technologies de l'information provided us with confirmation that it agrees with the recommendation it received. The detailed action plan will follow shortly.
- 3.1.C. Service des affaires juridiques**
[TRANSLATION] The Service des affaires juridiques provided us with confirmation that it agrees with the recommendations it received. The detailed action plans will follow shortly.
- Service des technologies de l'information**
[TRANSLATION] The Service des technologies de l'information provided us with confirmation that it agrees with the recommendation it received. The detailed action plan will follow shortly.

3.2. DATA INTEGRITY

Data integrity is defined as the property that data have not been exposed to any intentional or accidental alteration or destruction during processing, transmission and storage and retain a format that allows for their use. As such, we examined aspects concerning the SÉCI, STOP+ and Gescour applications configuration tables, geospatial data on Montréal roads (Géobase), logical access management, data transfer from SÉCI to STOP+ and the numerical sequence of tickets.

3.2.1. CONFIGURATION TABLES

3.2.1.A. BACKGROUND AND FINDINGS

Managing software configuration tables is a risk factor in managing application lifecycles. Changes to these tables must be supervised to ensure software operation and performance quality. The goal is to routinely monitor configuration changes by maintaining integrity and traceability while the application is being used. The contents of configuration tables are documented to formalize authorized values and to avoid having to rely on tacit knowledge.

During our work, we noted the following:

- The authorized content of configuration tables is not documented in SÉCI and is fragmentary in STOP+ and Gescour;
- There is no written procedure for changes to SÉCI, STOP+ and Gescour configuration tables;
- There is no log of changes to configuration tables. Some changes to SÉCI are done by email. However, no central log contains all configuration change permissions for the SÉCI, STOP+ and Gescour applications;
- Change authorization tracking reports are not produced when STOP+ and Gescour configuration table parameters are changed.

We believe that there are still risks, since unauthorized configuration table changes may be difficult to identify if the contents of the configuration tables are not documented because there is no written procedure to manage such changes. Because there is no central log of authorized changes, it may be impossible to determine whether all changes had been identified. The absence of documented change authorizations may call into question the legitimacy of configuration changes. This could lead to difficulties in transferring knowledge to successors.

RECOMMENDATIONS

- 3.2.1.B. We recommend that the Service de police de la Ville de Montréal:**
- use a tool to centralize authorization of changes to the electronic ticketing system application's configuration tables;
 - work with the Service des technologies de l'information to document authorized values for the electronic ticketing system application's configuration tables and to establish a change management procedure.
- 3.2.1.C. We recommend that the Service des affaires juridiques:**
- formalize the authorization of changes to the criminal offence processing system and Gescour configuration tables and use a change authorization centralization tool;
 - work with the Service des technologies de l'information to document authorized values for the criminal offence processing system application and Gescour configuration tables and to establish a change management procedure.

BUSINESS UNITS' RESPONSES

- 3.2.1.B. Service de police de la Ville de Montréal**
[TRANSLATION] A log will be created, and both the Service des technologies de l'information and the Service de police de la Ville de Montréal will have access rights to enter any changes in the tables, including the date, reason and person providing approval. (Planned completion: September 2019)
- A document will be developed to ensure that the table change request procedure and the authorized values are established. (Planned completion: September 2019)*
- Service des technologies de l'information**
[TRANSLATION] The Service des technologies de l'information provided us with confirmation that it agrees with the recommendation it received. The detailed action plan will follow shortly.
- 3.2.1.C. Service des affaires juridiques**
[TRANSLATION] The Service des affaires juridiques provided us with confirmation that it agrees with the recommendations it received. The detailed action plans will follow shortly.
- Service des technologies de l'information**
[TRANSLATION] The Service des technologies de l'information provided us with confirmation that it agrees with the recommendation it received. The detailed action plan will follow shortly.

3.2.2. GEOSPATIAL DATA

3.2.2.A. BACKGROUND AND FINDINGS

When issuing a parking or traffic ticket, the user must enter some data, including the address and intersection where the offence occurred. The Géobase used by SÉCI can quickly identify a street from a list provided, copy it to the ticket and confirm an address. Standardizing street names avoids errors and standardizes data for subsequent analyses and reports. 2018 Géobase is also available on the City's open data portal.

During our work, we noted the following:

- The 2014 version of Géobase used by the SÉCI software is not up to date. It does not reflect changes in street names or new streets added since then;
- Currently, updates are performed manually, by converting data or producing and loading files;
- The project to migrate to a new version of the SÉCI software features redesigned interfaces, including interfaces used by Géobase, which will enable developers to update the current architecture.

We believe that using the version of the Géobase still poses a risk because even if SÉCI can be used to directly enter address data, use of an updated list speeds up address data entry and reduces input errors and subsequent corrections.

RECOMMENDATION

- 3.2.2.B. We recommend that the Service des technologies de l'information establish an effective procedure for regularly incorporating updated versions of geospatial data into the electronic ticketing system's database.**

BUSINESS UNIT'S RESPONSE

- 3.2.2.B. Service des technologies de l'information**
[TRANSLATION] The Service des technologies de l'information provided us with confirmation that it agrees with the recommendation it received. The detailed action plan will follow shortly.

3.2.3. LOGICAL ACCESS MANAGEMENT

3.2.3.A. BACKGROUND AND FINDINGS

Logical access management refers to the process of administering and managing user accounts and user access rights to applications. A procedure has been established to regulate the process of granting, changing, withdrawing or reviewing access rights. The purpose of the following rules is to ensure that access rights that have been granted and actions allowed by these users have been authorized. An annual review of user rights ensures that the entire process is working properly.

During our work, we noted the following:

ELECTRONIC TICKETING SYSTEM APPLICATION

- SÉCI passwords are strong enough, because best password security practices are followed;
- Access rights are available for three different SÉCI modules: the police officer application (SÉCI-P), manager application (SÉCI-C) and PEO application (SÉCI-A);
- There is no documented procedure for SÉCI-A access management;
- With respect to SÉCI-C and SÉCI-P, the procedure for managing access rights, changing access rights and access rights expiry is included in the access rights approval form. However, the description of removals of access rights and access rights reviews are not taken into account;
- For police officers and managers, access rights are primarily provided via a daily automated procedure: a link between the Système intégré de gestion des effectifs policiers (SIGEP) and SÉCI-C automatically adds new users who will have access to SÉCI-P and SÉCI-C, but with status “disabled”. SÉCI-P and SÉCI-C accounts for new employees are activated after a form approved by their lieutenant or commanding officer has been received. The same form, with the same approvals is used for temporary access rights, but it contains an expiry date. Because these forms are not always archived, we cannot be sure that all access rights requests have been duly approved;
- For PEO, the person responsible for SÉCI-A access rights management will enter new employees in a file that will be uploaded by SÉCI. This access rights authorization file is not retained. New access rights are created with default status “disabled”. An email with the names to be activated is sent to the SÉCI operator. Temporary access rights will have an expiry date.

Although the people we interviewed said they had performed an annual review of SÉCI access rights, we could not identify any review documentation. However, there is a daily automated access rights removal procedure (interface with SIGEP) for people no longer employed by SPVM. This compensating control reduces the risk of unauthorized access after an employee leaves.

CRIMINAL OFFENCE PROCESSING SYSTEM AND GESCOUR APPLICATIONS

- STOP+ and Gescour passwords are strong enough, because best password security practices are followed;
- A written procedure regulates the granting, changing or removal of STOP+ and Gescour access rights. However, this procedure does not contain provisions for annual review of access rights. A form is completed to approve an access rights request;
- Access rights are granted to bailiffs from external firms. Virtual private network (VPN) keys are distributed to allow access. There is an up-to-date inventory list of these keys. It should be noted that the bailiff access rights management process is the same as the one used for other users;
- The results of our tests concerning authorization of new STOP+ access rights were positive. However, changes to access rights are not routinely documented and removals of access rights are not documented;
- Authorization of new Gescour access rights and changes to access rights are not routinely documented. Removals of access rights are not documented;
- A review of STOP+ access rights was apparently performed, but we did not find any review documents;
- There is a computerized procedure for suspending a Gescour user's account after 3 months of inactivity and removing access rights after 13 months.

ACCESS RIGHTS FOR ENTERING TICKET WITHDRAWALS

We examined access rights for ticket withdrawals because of the risks that this action involves. The *Criminal Code* authorizes the prosecutor to withdraw any charges prior to prosecution. A withdrawal involves a ticket that has been issued to the offender, but must be withdrawn for various reasons, including a data transcription error, death of the defendant or as a result of an investigation pursuant to a not guilty plea. Tickets for which there is a withdrawal request undergo a documented investigation, and notices of withdrawal, together with supporting documents, are signed by a municipal court prosecutor. Withdrawals are then entered in the STOP+ or Gescour application. We noted that:

- 3 administratively appointed persons enter withdrawals in the STOP+ application, whereas 160 users have rights to enter withdrawals;
- 28 administratively appointed persons enter withdrawals in the Gescour application, whereas 447 users have rights to enter withdrawals;
- STOP+ and Gescour do not have reports that identify the various users who have entered withdrawals. Such reports could be used to ensure that withdrawals have been duly authorized.

We believe that there are still risks with regard to logical access management. The lack of an access rights management procedure for the SÉCI-A module could lead to unauthorized access. Without documentation supporting the review of access rights and without formalizing approval of access to SÉCI, STOP+ and Gescour, users could have unauthorized access to these applications. Because access rights to enter ticket withdrawals are given to more users than those administratively authorized, users could make unauthorized ticket withdrawals.

RECOMMENDATIONS

- 3.2.3.B. We recommend that the Service de police de la Ville de Montréal:**
- document the SÉCI-A access rights management procedure;
 - complete the SÉCI-C and SÉCI-P access rights management procedure by including access review documentation and the description of all types of access rights removals;
 - formalize the access rights review process for the electronic ticketing system;
 - retain access rights approval documents for the electronic ticketing system.
- 3.2.3.C. We recommend that the Service des affaires juridiques:**
- complete the access rights management procedure for the criminal offence processing system and Gescour by including access rights review documentation;
 - formalize the access rights review process for the criminal offence processing system and Gescour and especially for rights to enter ticket withdrawals;
 - evaluate the possibility of setting up automated reports that identify criminal offence processing system and Gescour users who have withdrawn tickets;
 - retain approval documents for granting, changing and removing access rights to the criminal offence processing system and Gescour.

BUSINESS UNITS' RESPONSES

- 3.2.3.B. *Service de police de la Ville de Montréal***
[TRANSLATION] Emails from those responsible for the parking bylaw enforcement section when SÉCI-A account activation, resetting, and extension requests are made will be archived. This procedure will be written in the global access rights procedure (next point). (Planned completion: immediately)

*The 2012 SÉCI Access Management document will be updated.
(Planned completion: September 2019)*

*The annual review will be performed on March one month after most of the special accounts expire. A message will first be sent to all employees reminding them to forward the renewal form to an email address.
(Planned completion: September 2019)*

Activation or renewal request forms are saved on the server and kept for three full years. (Planned completion: immediately)

3.2.3.C. Service des affaires juridiques

[TRANSLATION] The Service des affaires juridiques provided us with confirmation that it agrees with the recommendations it received. The detailed action plans will follow shortly.

3.2.4. DATA TRANSFERS FROM THE ELECTRONIC TICKETING SYSTEM TO THE CRIMINAL OFFENCE PROCESSING SYSTEM

3.2.4.1. ELECTRONIC TICKETING SYSTEM – CRIMINAL OFFENCE PROCESSING SYSTEM INTERFACE

3.2.4.1.A. BACKGROUND AND FINDINGS

Ticket data are transferred from SÉCI-C to STOP+ via an interface. Among other things, data entered STOP+ are used to account for ticket revenues. Data transferred to this application are used to ensure that all transactions have been entered. We therefore reviewed data transfers between SÉCI and STOP+.

Our audit work found that all SÉCI-C data were transferred to STOP+ from January 1, 2017, to November 28, 2017. No recommendation is required.

3.2.4.2. DATA VALIDATION DURING TRANSFER TO THE CRIMINAL OFFENCE PROCESSING SYSTEM

3.2.4.2.A. BACKGROUND AND FINDINGS

When transferring ticket data from SÉCI to the STOP+ application, validation rules are applied to the transferred data. Error codes are assigned to tickets and are processed by a correction team. Some errors cannot be corrected (e.g., the offender cannot be identified) and the ticket is withdrawn. In other cases, the ticket can continue to be processed. Databases (e.g., data from the Société de l'assurance automobile du Québec (SAAQ), the Business Register) are queried to resolve other errors.

During our work, we noted the following:

- The validation error correction procedure is not documented;
- There is no validation error report that could be used to identify the most common types of errors and possible solutions.

We believe that there are still risks regarding STOP+ validation error processing because the correction procedure is not documented. This could affect the correction procedure and cause erroneous changes. A report on the types of errors identified when tickets are uploaded could be used to identify the causes of these errors and possible solutions, including automation of some validations, data entry or training on the impact that some data have on subsequent ticket processing.

RECOMMENDATION

- 3.2.4.2.B. We recommend that the Service des affaires juridiques:**
- **establish a procedure for validation error processing;**
 - **work with the Service des technologies de l'information to develop a validation error report and document possible solutions.**

BUSINESS UNITS' RESPONSES

- 3.2.4.2.B. Service des affaires juridiques**
[TRANSLATION] The Service des affaires juridiques provided us with confirmation that it agrees with the recommendations it received. The detailed action plans will follow shortly.
- Service des technologies de l'information**
[TRANSLATION] The Service des technologies de l'information provided us with confirmation that it agrees with the recommendation it received. The detailed action plan will follow shortly.

3.2.5. NUMERICAL SEQUENCE OF TICKETS

3.2.5.A. BACKGROUND AND FINDINGS

A numerical sequence can be monitored to ensure that all tickets are accounted for. A random function assigns the numbers of tickets issued by SÉCI by designated range, by a group of issuers. This function takes into account previously assigned numbers. For papers tickets in STOP+ and Gescour, numbers are also allocated by specific range according to the issuer and are grouped together in a notebook distributed to ticket issuers.

During our work, we noted the following:

- SÉCI, STOP+ and Gescour do not have the functionality to generate automated numerical sequence monitoring reports that would make it easier to confirm that all tickets are accounted for;
- A recommendation has already been made on monitoring the numerical sequence of Gescour tickets and the introduction of a new application was supposed to incorporate this monitoring functionality;
- It should be noted that work on confirming that all SÉCI tickets are accounted for as part of the audit of the City’s financial statements for the 2017 fiscal year did not reveal any outliers in ticket number sequences.

We believe that risks remain because, without an automated numerical sequence monitoring report, additional efforts are needed when the City is required to ensure that all tickets are accounted for. As a result, this could lead to a loss of efficiency.

RECOMMENDATION

3.2.5.B. We recommend that the Service des technologies de l’information evaluate the possibility of incorporating the functionality of an automated numerical sequence monitoring report into the electronic ticketing system and the criminal offence processing system and Gescour applications.

BUSINESS UNIT’ RESPONSE

3.2.5.B. *Service des technologies de l’information*
[TRANSLATION] The Service des technologies de l’information provided us with confirmation that it agrees with the recommendation it received. The detailed action plan will follow shortly.

3.3. CHANGE MANAGEMENT

3.3.1.A. BACKGROUND AND FINDINGS

In order to oversee changes to applications, a Change Advisory Board (CAB) supported by a change management procedure ensures that only authorized changes are put into production. A structured approach minimizes the risks and impacts arising from changes that need to be made to applications.

During our work, we noted the following:

- A CAB has been in place since the fall of 2017 for SPVM applications including SÉCI;

- A CAB for SAJ computer applications, including STOP+ and Gescour, has been in place since the fall of 2016;
- There is no written procedure for managing changes to SÉCI, STOP+ or Gescour applications;
- Software is used to list, prioritize and assign change requests for all three applications;
- Acceptance tests are performed and documented for SÉCI, STOP+ and Gescour. Note that the tests are well supported for changes in phase 2 of the new *Code of Civil Procedure* (NCCP) for the STOP+ application;
- Acceptance of changes to STOP+ and Gescour was not routinely documented;
- STI does not use a version management tool for the STOP+ and Gescour applications. Acquisition of a version management tool was considered four years ago, but there was no follow-up. Version management tools are used for sharing programmers' work by properly merging their changes.

Although best Change Advisory Board practices are being followed, we believe that a risk remains, because the lack of written change management procedures could lead to misunderstandings and confusion regarding change request processing procedures. This could affect the effectiveness of the applications. The lack of a version management tool could increase the risk of errors when changes are made to the STOP+ and Gescour applications.

RECOMMENDATIONS

- 3.3.1.B. We recommend that the Service des technologies de l'information:**
- **establish a procedure for managing changes to the electronic ticketing system, the criminal offence processing system and Gescour and to have it approved by the appropriate change advisory boards;**
 - **review whether a version management tool should be acquired for the criminal offence processing system and Gescour applications.**
- 3.3.1.C. We recommend that the Service des affaires juridiques document the acceptance of change requests for the criminal offence processing system and Gescour.**

BUSINESS UNITS' RESPONSES

- 3.3.1.B. *Service des technologies de l'information***
[TRANSLATION] The Service des technologies de l'information provided us with confirmation that it agrees with the recommendations it received. The detailed action plans will follow shortly.

3.3.1.C. Service des affaires juridiques
 [TRANSLATION] *The Service des affaires juridiques provided us with confirmation that it agrees with the recommendation it received. The detailed action plan will follow shortly.*

3.4. HUMAN RESOURCE AND TECHNICAL SUSTAINABILITY

3.4.1.A. BACKGROUND AND FINDINGS

In order to plan for computer application updates, technical and human resources must be coordinated to ensure adequate support. In larger companies, this can mean a service level agreement that defines required service delivery between the service provider and the client unit, as well as expected service quality. A service agreement should stipulate concrete resources to meet business needs and enable seamless application updates while taking into account the risk that these applications may become obsolete. Once the agreement is defined, the IT department must then provide adequate and sufficient human resources to meet its commitments. Also, to ensure that the applications are technically sustainable, appropriate documentation must be kept up to date.

Knowledge of municipal court operations is complex, detailed and scarce. For example, several business rules govern ticket processing options, and they must be correctly interpreted to comply with the spirit of the law when they are translated into computer language. It therefore takes time to incorporate new human resources.

During our work, we noted the following:

- The SÉCI application has not been updated in 10 years. A newer version is scheduled to be introduced in 2019;
- The STOP+ and Gescour applications were developed internally (STOP+ in 1992 and Gescour in 1997) using Natural 6.3 IBM language, which is obsolete;
- Bill 28 “*An Act to establish the new Code of Civil Procedure*” was enacted on February 21, 2014, and came into force on January 1, 2016. This new code introduces a whole new philosophy with regard to civil procedure and especially the execution of judgments. In this matter, the general rule will now be that there must be only one enforcement notice (formerly a writ of seizure) for a debtor/defendant and that all creditors of that person must join the first creditor who has filed an enforcement notice against him. This new legal provision therefore requires that the creditor verify the pleadings of the other courts of Québec to determine whether an enforcement notice has already been issued against his debtor/defendant. If such notice exists, the Code requires that creditor join the proceedings that have already been initiated. In criminal matters, the creditor appointed by law collects fines and in civil matters, the creditor must delegate execution of the judgment to a bailiff. Due to technological obsolescence, the lack of specialized resources and the extent of required updates to the STOP+ and Gescour systems, the

City has a significant backlog of Enforcement Notices to be sent to bailiffs. However, the systems have been modified and the fine collector can send the “Notice of nonpayment of fine” to SAAQ and apply Denver boots;

- A judicial administration transformation project known as “digital court” has started and aims, among other things, to improve, simplify and optimize municipal court activities and to modernize technological solutions, tools and equipment. The project is in the technical specification drafting phase. The contract is expected to be awarded in 2019 with a 36-month implementation phase;
- Documentation for the SÉCI, STOP+ and Gescour applications is obsolete and incomplete except for recent developments in STOP+ and Gescour. SÉCI documentation is slated to be updated as part of the migration to the new version;
- Only one person provides technical support for SÉCI. However, there are procedures to be followed if that person is absent. A person was identified as a successor in early 2018 and started his apprenticeship;
- Three analysts and two developers provide user support and development for the STOP+ and Gescour applications. An analyst’s retirement was postponed from the summer of 2018 to March 2019 following the retirement of the Gescour programmer in June 2018. A new analyst, who started in the fall of 2018, is under training for knowledge transfer. One of the analysts quit his job in June 2018 and a replacement process is underway. Another analyst is expected to retire in December 2019. Candidates are being recruited for his position;
- There is no service agreement between the STI and SAJ for STOP+ and Gescour. There is also no agreement between the STI and the SPVM for SÉCI. However, a recommendation from the 2014 audit report issued by the Bureau du vérificateur général on “Information “technology governance” specifically addresses this issue. This recommendation is still ongoing. However, short-term activities are planned at Change Advisory Board meetings.

The technological obsolescence of the SÉCI, STOP+ and Gescour applications, their documentation and the lack of specialized human resources could make it difficult to keep them operational until the “digital court” project is completed. Also, these applications are obsolete, which makes it difficult to develop the computer updates that the municipal court’s fine collector needs to execute the remedies stipulated under the Act and to recover the sums due to the City.

RECOMMENDATION

- 3.4.1.B. We recommend that the Service des technologies de l'information:**
- review the priority of the “digital court” project and the SÉCI upgrade project in order to update the electronic ticketing system, the criminal offence processing system and Gescour;
 - produce a human resource succession action plan, including knowledge transfer for the electronic ticketing system, criminal offence processing system and Gescour;
 - implement a process for updating the relevant documentation for the electronic ticketing system, criminal offence processing system and Gescour applications.

BUSINESS UNIT'S RESPONSE

- 3.4.1.B. *Service des technologies de l'information***
[TRANSLATION] The Service des technologies de l'information provided us with confirmation that it agrees with the recommendations it received. The detailed action plans will follow shortly.

3.5. LEGAL AND REGULATORY WATCH

3.5.1.A. BACKGROUND AND FINDINGS

For the SÉCI, STOP+ and Gescour applications, it is particularly important that the computerized process comply with legal requirements. A legal and regulatory watch helps to identify future changes in a timely manner. The scope of an amendment to a statute or regulations must be assessed to determine its impact on current operation of the SÉCI, STOP+ and Gescour applications. Subsequently, necessary adjustments must be made in a timely manner. Legal changes could affect the ticket processing procedure. For example, the NCCP, which was enacted in 2014 and came into force on January 1, 2016, gave rise to significant changes in the operation of the STOP+ and Gescour applications. As a result, the writ of seizure was replaced by an enforcement notice, which has its own business rules. Also, changes directly related to offences as well as judicial rates occur on a regular basis. Such changes include offences pursuant to a new municipal bylaw or the reform of the *Highway Safety Code*.

To ensure that SÉCI, STOP+ and Gescour are kept up to date, SAJ monitors changes to the:

- *Criminal Code*;
- provincial laws;
- bylaws issued by city council, the urban agglomeration council, borough councils, the executive committee and related municipalities (the City municipal court provides legal services involved in processing tickets issued by related municipalities).

Any offence must be codified before tickets can be issued for that offence. The Direction des poursuites pénales et criminelles is responsible for managing the list of offences, including new regulations and updates. Once the information has been forwarded to the Direction des poursuites pénales et criminelles, the offence is codified or amended in the hearings component of the municipal court integrated system application, which subsequently communicates these changes to the SÉCI, STOP+ and Gescour applications. The current municipal bylaw search tool, which no longer meets drafting, retention, dissemination and operation requirements, will undergo significant changes under STI's three-year capital expenditures program (TCEP), project number 70550 "*Gestion des règlements municipaux*" [Municipal bylaw management]. This project, started in 2017, provides for the implementation of a computerized "*Gestion des règlements municipaux*" application including a:

- bylaw standardization and drafting assistance tool;
- administrative coding automation tool;
- a powerful and user-friendly search tool, available on the City's Internet portal.

According to the project description, this tool will improve service quality and productivity and will work with existing applications.

During our work, we noted the following:

- The process for communicating amendments to statutes and regulations to those responsible for the SÉCI, STOP+ and Gescour applications has not been formalized. Particularly for regulations, the Direction des poursuites pénales et criminelles is not confident that the offence lists are up-to-date for these applications;
- Work to incorporate major changes introduced by the NCCP (enacted on February 21, 2014, and in force since January 1, 2016), affecting the STOP+ and Gescour applications, started in early 2015 and is ongoing. Required changes cannot be quickly and easily incorporated into the STOP+ and Gescour applications. Workarounds were required to continue monitoring STOP+ ticket procedures. The Gescour application has still not been changed to meet NCCP requirements. This is delaying compliance with ticketing procedures targeted by this application. In addition, the guideline on debt management rules must be followed. This is especially true, because one of its principles states that "*We must also make sure to recognize debts quickly and take steps to recover them.*";

- The City's financial statement for the year ended December 31, 2016, shows that delays in implementing the NCCP have resulted in the following adverse deviations:
 - \$10.5 million in traffic and parking tickets (STOP+);
 - \$2 million in revenues from other fines (Gescour);
 - It states that these revenues are carried forward to 2017. This analysis was not produced in the 2017 financial statement.
- The "*Gestion des règlements municipaux*" project, which provides for the implementation of a new computerized application that centralizes municipal bylaw management, excludes bylaws of related municipalities from its current scope.

We believe that there are still risks in the current situation, because if the communication of amendments to statutes and regulations is not formalized, the continuous and timely flow of necessary information to those responsible for changes to the SÉCI, STOP+ and Gescour computer applications cannot be ensured. These applications are at risk of not being up to date in accordance with statutory and regulatory requirements. Delays in incorporating the NCCP into offence management applications could still have major financial impacts. By excluding related municipalities from the scope of the "*Gestion des règlements municipaux*" project, bylaws would not be completely centralized, and this application could not be used as a centralized tool to help ensure that applications are up to date with respect to the bylaws of these related municipalities.

RECOMMENDATIONS

3.5.1.B. We recommend that the Service des affaires juridiques formalize the process of communicating amendments to statutes and regulations to those responsible for the electronic ticketing system, the criminal offence processing system and Gescour applications.

3.5.1.C. We recommend that the Service des technologies de l'information:

- **incorporate the bylaws of related municipalities into the scope of project # 70550 "*Gestion des règlements municipaux*" of the three-year investment program;**
- **work with the Service des affaires juridiques to identify possible actions in order to speed up the integration of legal changes affecting the operation of the electronic ticketing system, the criminal offence processing system and Gescour applications, including those from the latest version of the *Code of Civil Procedure* (in force since January 1, 2016).**

BUSINESS UNITS' RESPONSES**3.5.1.B.****Service des affaires juridiques**

[TRANSLATION] The Service des affaires juridiques provided us with confirmation that it agrees with the recommendation it received. The detailed action plan will follow shortly.

3.5.1.C.**Service des technologies de l'information**

[TRANSLATION] The Service des technologies de l'information provided us with confirmation that it agrees with the recommendations it received. The detailed action plans will follow shortly.

Service des affaires juridiques

The Service des affaires juridiques provided us with confirmation that it agrees with the recommendation it received. The detailed action plan will follow shortly.

4. CONCLUSION

Based on our audit work, we conclude that the City's electronic ticketing system (SÉCI), criminal offence processing system (STOP+) and Gescour are technologically obsolete and that the City also has to deal with human resource succession issues. This situation and gaps in access rights management and change management make it difficult to keep these applications running and pose a data reliability and integrity risk.

Among other consequences, because the STOP+ and Gescour applications are obsolete, they are very difficult to adapt and, under the circumstances, they cannot meet the fine collector's enforcement of judgment needs. This situation makes it difficult to recover sums due to the City. These applications manage an important source of revenue (\$172.8 million in 2017).

Also, because STOP+ and Gescour are obsolete and there is no human resource succession action plan, work that began in 2015 to incorporate important changes introduced by the new *Code of Civil Procedure* (enacted on February 21, 2014, and in force since January 1, 2016) are still in progress.

Here are the details according to the following assessment criteria:

1. Assessment criterion – Roles and responsibilities:

The owners of the SÉCI, STOP+ and Gescour applications as well as the roles and responsibilities for managing these applications have not been formalized.

2. Assessment criterion – Data integrity:

Passwords used in logical access management are strong enough. However, application access management procedures are partially documented or nonexistent. With the exception of STOP+, there are gaps in access rights approvals, changes and removals where written records are not routinely retained. Also, the access rights review is not documented for SÉCI, STOP+ and Gescour. Finally, the item we consider most critical is that access rights have been granted to too many STOP+ and Gescour users, who do not have the administrative authority to enter ticket withdrawals.

All data are transferred from SÉCI to STOP+. However, there is no formal report or procedure to correct validation errors during these transfers.

Management of SÉCI, STOP+ and Gescour configuration tables needs to be improved because configurations and changes are not properly documented.

Géobase data integrated into SÉCI are from 2014 and the method used to update them is obsolete.

SÉCI, STOP+ and Gescour do not have the functionality to generate automated numerical sequence monitoring reports that would make it easier to confirm that all tickets are accounted for.

3. Assessment criterion – Change management:

A Change Advisory Board is in place for the SÉCI, STOP+ and Gescour applications. However, there is no written procedure for managing changes to the SÉCI, STOP+ and Gescour applications. Approval of change requests for STOP+ and Gescour are not routinely documented. Finally, there is no version management tool for STOP+ and Gescour.

4. Assessment criterion – Human resource and technical sustainability:

The STOP+ and Gescour applications are technologically obsolete, and the SÉCI application has not been updated for 10 years. In addition, documentation for these applications is incomplete and is not up to date. With regard to specialized human resources, the successors identified for SÉCI have not yet been trained, and the successors identified for Gescour are in the knowledge transfer phase.

5. Assessment criterion – Legal and regulatory watch:

The process for communicating amendments to statutes and regulations to those responsible for SÉCI, STOP+ and Gescour has not been formalized. The TCEP project entitled "*Gestion des règlements municipaux*", which provides for a new application to centralize municipal bylaw management, excludes related municipalities from its current scope, whereas the municipal court also provides legal services involved in processing tickets issued by related municipalities.

5. APPENDIX

5.1. OBJECTIVE AND EVALUATION CRITERIA

OBJECTIVE

Determine whether controls put in place for the SÉCI, STOP+ and Gescour applications can ensure their reliability, data integrity and compliance with applicable statutes.

EVALUATION CRITERIA

Our audit is based on assessment criteria in the following five areas:

1. Roles and responsibilities:

Roles and responsibilities are defined, approved, communicated and provide clear accountability. An application owner is formally identified for each one of the following applications: SÉCI, STOP+ and Gescour.

2. Data integrity:

- **Configuration tables:** Authorized configuration table values are documented. Changes and updates to tables are duly authorized and are performed in accordance with a formal procedure;
- **Geospatial data (Géobase):** The SÉCI Géobase is updated on a regular basis.
- **Logical access management:** Passwords are strong enough to prevent unauthorized access to applications. User access rights management ensures that only authorized individuals have access based on their roles and responsibilities. Access rights to enter ticket withdrawals are granted only to authorized persons;
- **Data transfers from SÉCI to STOP+:** All data are transferred from SÉCI to STOP+. Validations performed during transfers from SÉCI to STOP+ ensure that data are corrected;
- **Numerical sequence of tickets:** Automated numerical sequence reports to monitor SÉCI, STOP+ and Gescour tickets are used to ensure that all tickets issued are accounted for.

3. Change management:

There is a change management procedure and changes are approved at the start of production. The tools used to make changes facilitate change management.

4. Human resource and technical sustainability:

The applications are reliable and meet established needs. Both technical and human resources measures support their development.

5. Legal and regulatory watch:

A legal and regulatory watch is in place to ensure that the SÉCI, STOP+ and Gescour applications are updated to incorporate amendments to statutes and regulations.