Vérificateur général
de la Ville de Montréal

**Report of the Auditor General of the Ville de Montréal**
to the City Council and to the Urban Agglomeration Council

For the Year Ended December 31, 2013

5.3

# Management of Software Licences

## (Service des technologies de l'information)

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# List of Acronyms

| | | | |
|---|---|---|---|
| DSM | Desktop and Server Management | STI | Service des technologies de l'information |
| SIMON | Système intégré Montréal | | |

# 5.3. Management of Software Licences (Service des technologies de l'information)

## 1. Introduction

The purpose of the *Copyright Act*[1] of Canada is to protect the intellectual property of works; this ensures that, particularly in the area of computer programs,[2] a work may not be copied, transmitted, downloaded or used without the permission of the author or copyright owner.

The Ville de Montréal (the city) acquires the rights required for the computer programs it uses by purchasing software licences. These acquisitions all lead to the conclusion of agreements, regardless of the supplier or licence management method used. These software licence agreements all contain clauses on the use that may be made of the software broadly in terms of the user, computing power or the workstation. These variables are later used by the manufacturer as the basis for billing for the acquisition of a licence or for maintenance costs.

Management of software licences is important in municipal affairs. All applications not designed in-house require a licence. This licence gives the right to use a software application and carry out the transactions necessary for the city's various systems as well as to support its daily activities. We also want to stress that, as new applications are deployed, software licence budgets account for an increasingly substantial investment every year.

Having control of software licence management enables the city to:

- ensure compliance with contractual agreements with suppliers with respect to the *Copyright Act*;
- reduce the risk of unexpected billing by suppliers following audits revealing that it has not complied with its obligations;
- ensure that favourable conditions are maintained with suppliers when maintenance contracts are renewed;
- have better negotiating power vis-à-vis software suppliers because it knows the number and types of products used;
- ensure better management of the way in which various software products are used;
- optimize software licensing costs through standardization of the products used.

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1 RSC (1985), chapter C-42.

2 According to the guideline "Droit d'auteur en matière de programme d'ordinateur," ([TRANSLATION] "Copyright as it pertains to computer programs") a computer program is *[TRANSLATION] "a set of instructions or statements, expressed, fixed or embodied or stored in any manner that is to be used directly or indirectly in a computer in order to bring about a specific result."*

Three software supplier audits conducted since 2009 have resulted in additional billing to the city for non-compliance with its contractual obligations to use licences for their products. The results of these audits are shown in Table 1.

**Table 1 – Results of Three Software Supplier Audits**

| Supplier | Date of decision-making summary | Amount paid following the audit |
|---|---|---|
| Microsoft | June 2009 | $564,890 |
| Oracle | June 2011 | $1,295,832 |
| IBM | March and July 2012 | $831,218 |
| **Total** | | **$2,691,940** |

These amounts represent only licence fees claimed by suppliers. To assess the overall impact of the audits, it would be also be necessary to factor in the time spent by the internal resources of the Service des technologies de l'information (STI) to carry out the necessary research, collaborate in audits and negotiate the final invoice with these same suppliers.

The results of these audits are among the factors that motivated us to conduct our examination.

For the purposes of our audit, we divided software licences into two main lines of products: corporate software licences and commercial software licences, because they better illustrate differences among the processes of acquiring and managing licences for various suppliers.

For the purposes of this audit report, corporate software includes all applications installed on a central server that can be accessed from a workstation by means of a user code.

SIMON (for Système intégré Montréal), Kronos and GDD (decision-making record management system) are among the applications of this product line, for which some of the suppliers are Oracle and IBM. These applications are generally used by hundreds of users at the same time. Billing for these licences takes place in two steps. The initial acquisition of a licence is generally paid for out of the three-year capital expenditures budget as part of an information technology development project or as part of a needs review when the agreements are renewed. This amount represents the initial right to use the software. Since one feature of this software is that it is updated periodically by suppliers, maintenance costs, charged on a yearly basis, enable users to benefit from software upgrades. The agreements, which usually have an expiry date, can be concluded following a call for tenders or privately. The STI is generally the entity in charge of this type of licence for the city.

As for commercial software, it includes all types of licences generally associated with a workstation or equipment. These applications, for which one of the suppliers is Microsoft, include office automation software products such as Office Suite, Acrobat and Antidote. In this product line we also include workstation-related software (Windows 7).

Unlike corporate software, which is associated with access, this software is associated instead with a specific workstation or equipment and specific versions of a product are acquired on the basis of needs. They serve only one machine or user at the same time. These licences are acquired through a one-time fee (if required) and can be used for as long as the software functions are suited to needs. There is no initial expiry date for these licences. This type of software licence does not include version updates, only security and compatibility patches. In order to improve the product functions, a licence for the new version of the software must be acquired. At present, every administrative unit that uses these products acquires them through its operating budget and is responsible for managing this type of licence for its unit.

Table 2 provides a good illustration of the differences between these two lines of products.

**Table 2 – Types of Software Licences**

| Type of software | No. of agreements with expiry | No. of suppliers | Basis for invoicing | Licence fees | Annual costs |
|---|---|---|---|---|---|
| Corporate | 78[a] | 61[a] | No. of users or computing power | N/A | $10.5 million[a] |
| Commercial | N/A | 35[b] | Servers or workstations | $9.0 million[c] | N/A |

[a] According to the table "Portefeuille contractuel STI – 2013" ([TRANSLATION] "STI Contract Portfolio – 2013").
[b] According to the recommended software to be reviewed in the document "Catalogue de logiciels normalisés" ([TRANSLATION] "Catalogue of standardized software") as of November 8, 2013.
[c] According to decision-making summary 1130066003 "Entente-cadre pour la fourniture sur demande des produits de l'éditeur Microsoft" ([TRANSLATION] "Framework agreement for the provision of Microsoft Publisher products upon request").

## 2. Purpose and Scope of the Audit

The objective of our audit was to assess the extent to which the existing control framework makes it possible to ensure that:

- software licenses provided by various suppliers are complied with;
- agreements concluded with software suppliers are established on the basis of needs and under the best conditions.

Our audit focused primarily on the years 2012 and 2013 and took into account information that was communicated to us up to November 2013. For some aspects, data prior to these years were also taken into consideration.

Our audit focused on the STI. To back up our conclusions, we selected and examined various software licensing agreements for corporate licences. For commercial software, we examined the main processes in place.

This audit does not include an examination of software licensing agreements for mobile devices, free software membership or the contract awarding process.

## 3. Summary of Findings

### Compliance (Section 4.1)

#### • Control Framework (Section 4.1.1)

As a result of our audit, we found that, even though a guideline was issued on copyright as it pertains to computer programs, no clear accountability is assigned to any stakeholders to permit the designation of an officer truly responsible for compliance with software licences. Moreover, there is no centralized information system for the licences held and used for the purpose of monitoring compliance with the licences of various software products on a city-wide basis. Furthermore, the available information on the software licences held and the software licences used is sometimes kept by separate individuals.

We noted that compliance monitoring reports are not produced systematically and that, in some cases, the officers responsible for agreements do not always have the information they need to assess the degree of compliance. We also noted the absence of a formal accountability reporting process in this area.

We recommended that the Direction générale amend the guideline entitled “Droit d’auteur en matière de programme d’ordinateur” ([TRANSLATION] “Copyright as it pertains to computer programs”) and, if necessary, any other relevant management framework, so that the STI is designated as the corporate entity responsible for monitoring compliance with software licences and has sufficient authority and the necessary means to exercise these responsibilities. The purpose of this recommendation is to enable the STI to submit accountability reporting to the Direction générale on copyright compliance in the area of computer programs on a city-wide basis.

## • Standardization of Commercial Software (Section 4.1.2)

The STI produces a list of standardized software applications to be used in order to reduce incompatibilities among the different applications and the efforts expended to provide user support. This standardization facilitates compliance with software licences.

Furthermore, to reduce the risk of unauthorized software installation, workstations are "locked," meaning that an administrator code and a password are required in order to install software on the workstation.

According to the information obtained, 89% of workstations under the authority of the Division services aux utilisateurs at the STI are locked. However, we noted that for seven administrative units, which represent 17% of the workstations under its management, only 57% of workstations are locked. Moreover, the Division services aux utilisateurs has no authority over 22% of the city's workstations.

An inventory of the software installed on workstations was produced as part of a workstation operating system upgrade project. It showed that several versions of the same software were in use and that some software that was considered unauthorized, according to the document submitted, was installed on workstations.

We found that no periodic examination of the software installed was conducted. Moreover, while the abovementioned guideline stipulates that computer programs authorized by the city are the only ones that may be installed, the list of standardized products, posted on the site provided for this purpose, is not updated regularly, and there is no list of banned or prohibited software.

We recommended that the STI conduct a periodic examination of the software installed on workstations, obtain specific reasons for any departure from the principle of locking workstations and update the list of standardized software or establish a list of specifically prohibited software.

## • Adjustment of Software Licences (Section 4.1.3)

Various ongoing computer projects should ultimately make it possible to rectify breaches of commercial software licensing agreements. However, these projects do not cover all administrative units or commercial products in use within the city. We also noted that the image appearing at the initial configuration of a workstation contained software requiring the use of a licence, and no assurance was given that such a licence was held before the

workstation was returned to the user. This finding also holds true for subsequent installations of other software.

We also noted that there is no mechanism in place that is likely to reduce the risk that discrepancies between the licences held and the licences installed will occur again in future.

We recommended that the STI decide on and implement a process and tools in order to quickly track down any discrepancies between the licences held and those installed. We also recommended that it implement solutions to rectify the situation for administrative units and software products that are not part of ongoing projects.

## Optimization of Licensing Agreements (Section 4.2)

### • Control Framework (Section 4.2.1)

Like compliance with software licensing, achievement of the objective of agreement optimization is also dependent upon the abovementioned control framework.

As a result, the same findings and recommendations regarding compliance with licensing agreements also have an impact on the optimization of licensing agreements.

Moreover, some elements, such as the designation of an officer responsible for each supplier, mainly with respect to corporate software, as well as the creation of formal strategies for the periodic and centralized acquisition of all commercial software products, based on needs, products and opportunities, would help optimize the city's negotiating power.

In view of the potential benefits that could be derived from improvement of the processes for these two elements, we recommended that the STI evaluate the possibility, through a cost/benefit analysis, of applying the above principles and determining the changes, if any, that need to be made to various processes and implement them.

### • Application Access Requests (Section 4.2.2)

Access to corporate software is managed by means of access requests submitted to the STI by the designated client officer of each administrative unit. For some applications, there are several underlying licences for carrying out all the possible tasks. Some of these tasks require the use of licences, which are occasionally very costly. However, client officers are not formally briefed on the costs of some licences and no predefined profile is established for individuals assuming this responsibility to provide a better framework for access requests.

Furthermore, managers who approve access requests are not held financially accountable for the decisions made.

We recommended that the STI facilitate the work for client officers by providing them with training on the costs and consequences of different means of accessing the city's systems, especially those with a major financial impact. Also, we recommended that it consider implementing the user-pay principle for services or access requested by administrative units at the STI.

- **Reserve for Obsolescence (Section 4.2.3)**

While there is currently a reserve for the technological obsolescence of equipment, no reserve exists for the technological obsolescence of software. We recommended that the STI consider the creation of such a reserve based on the city's usual replacement cycle.

# 4. Detailed Findings and Recommendations

## 4.1. Copyright Compliance

The control framework used by the municipal administration to ensure that the city complies with the *Copyright Act* as it pertains to computer programs should include the following management principles:[3]

- Sharing of roles and responsibilities with respect to copyright compliance is organized in such a way as to ensure clear, effective accountability;
- An administrative unit is accountable for monitoring compliance with software licences on a city-wide basis and, for this purpose, has sufficient authority as well as the necessary means to exercise its responsibilities;
- The processes, information systems and tools in place can be used to obtain the information needed to monitor compliance with software licences throughout the city;
- Periodic compliance monitoring and high-level accountability reporting can help give formal status to the situation with respect to the *Copyright Act* as it pertains to computer programs.

These management principles should be embedded in management frameworks so that the orientations and methods adopted by the city are clearly communicated in order to ensure compliance with the *Copyright Act* as it pertains to computer programs.

[3] These statements, excerpted from criteria of control published by the Canadian Institute of Chartered Accountants, now CPA Canada, were adapted.

In addition to this control framework, further specific measures can be adopted to facilitate or rectify the situation with respect to compliance with software licences. For this purpose, we examined the standardization of commercial software and some projects dealing with adjustment of software licences.

## 4.1.1. Control Framework

### 4.1.1.A. Background and Findings

### Management Frameworks

A guideline entitled “Droit d’auteur en matière de programme d’ordinateur” ([TRANSLATION] “Copyright as it pertains to computer programs”) was approved and issued in May 2009 for the purpose of specifying the orientations of the city’s Information Security Policy with respect to compliance with the *Copyright Act*. This guideline applies to all authorized users of informational assets and was issued following an analysis of the city’s existing organization and processes.

In particular, this guideline sets forth guiding principles, roles and responsibilities for the various stakeholders as well as procedures for applying them.

Even though it was the STI that was effectively mandated to defend the city’s interests during supplier audits, this guideline makes each manager and stakeholder in the administrative units responsible for ensuring compliance. The mode of operation recommended under this guideline creates conditions such that accountability for compliance with software licences is spread out. In short, all administrative units are responsible for the management of software licences but, at the end of the day, none of them is truly accountable for copyright compliance.

### Roles and Responsibilities

With respect to corporate software licences, an officer responsible for monitoring the deadlines for all these agreements was designated at the STI; officers were also appointed for each software maintenance contract in force. However, the agreements concluded by some administrative units, such as boroughs, are not included in this monitoring process at the STI, and none of the officers responsible for these units is known to the person responsible for contracts. These administrative units can use other corporate software licences identical to those managed by the STI.

With respect to commercial software licences, an administrative unit within the STI was designated as responsible for the installation of software products of this type, irrespective of the supplier. However, it does not handle the workstations of administrative units that are under its authority, which excludes some central departments and boroughs. It does not manage the licence acquisition process.

## Information Systems

For corporate software, the systems and tools in place can generally be used to obtain information on the licences used. However, it can happen that data on the use of some software products, which are necessary for compliance monitoring, are generated by systems that cannot be accessed by the designated officer responsible for an agreement.

For commercial software, a tool known as Desktop and Server Management (DSM) can be used to detect various software applications and the versions installed on workstations. The most recent inventory was produced as part of an ongoing workstation operating system upgrade project. However, the tool is not deployed on all the city's workstations, which makes it difficult to obtain a comprehensive inventory of the software products used.

Since the STI does not have authority over all the city's workstations, it can happen that some administrative units use software requiring a licence locally and the STI is unaware of this situation. In the case of some suppliers, the fact that information on licences is not compiled at a centralized location complicates any compliance exercise.

We note that, at present, no inventory or centralized information system on the licences held is in place to quickly determine the city's degree of compliance for each of the software products used.

## Monitoring and Accountability Reporting

In order to be able to monitor compliance with software licences, it is necessary to have both the information on the licences used and the information on the number of licences held on hand. The latter information is generally held by the person responsible for purchasing software licences.

For corporate licences, the officers responsible for agreements use appropriate tools to ensure that there is a correlation between the number of licences used and the number of licences held, based on the variables to be controlled, because the person purchasing licences also generally controls their use.

In fact, reports are produced for corporate software upon the request of the officers responsible, with the aid of various tools, on an ad hoc basis while projects are in progress, while needs are being re-evaluated or when agreements are renewed. This compliance exercise is carried out at the discretion of the officer responsible and is therefore not necessarily carried out at the same time and in a consistent manner for all software. Adjustments are made if this is considered appropriate, but these data are not transmitted to any authority.

However, even though officers responsible for agreements are designated, they do not always have information on all the agreements that they manage. In some cases, it can happen that a supplier offers various types of software licences that are managed by more than one administrative unit at the STI. Since only one officer is designated as responsible for each agreement, and since this person does not receive any formal report from the other officers on data related to the agreement that he/she manages, it is impossible for that officer to monitor that agreement adequately.

In the case of commercial software, the licence acquisition process falls under the jurisdiction of the administrative units. The installation of software on workstations is within the remit of the STI, for units under its authority. It carries out this task after the administrative unit has sent a request to the service centre. This allows the STI to know the number of users of a product, but not the number of licences held for this same product. Under these circumstances, there is at present no means of establishing, in a comprehensive manner for each product, a correlation between the number of licences held and the number of licences installed, because the officer responsible for each administrative unit does not submit a report to the STI. The STI is therefore unable to assess the compliance status of this type of licences for the city as a whole.

Accordingly, we noted that no comprehensive report on the monitoring of compliance with software licences is produced systematically, either for corporate software or commercial software.

Similarly, we found that, on the subject of compliance with software licences, no high-level formal accountability reporting is carried out on a regular basis.

In closing, we think that, with the current control framework, the municipal administration is unable to ensure that the city complies with the *Copyright Act* as it pertains to computer programs. In view of the fact that compliance with laws and regulations is a strategic issue for the municipal administration, changes should be made to the current control framework in the near future.

**4.1.1.B. Recommendation**

**We recommend that the Direction générale take the necessary steps to amend the copyright guideline as it pertains to computer programs and, if necessary, any other relevant management framework, so that the Service des technologies de l'information:**

- **is designated as a corporate entity responsible for monitoring compliance with software licensing throughout the city;**
- **is invested with sufficient authority to exercise this responsibility, in particular with respect to obtaining appropriate information from business units for this purpose;**
- **has the necessary means for obtaining and validating the information required for compliance monitoring;**

**so that it can submit accountability reports to the Direction générale on copyright compliance as it pertains to computer programs throughout the city, at a frequency and in a format to be established.**

**Business unit's response:**

*[TRANSLATION] Amend the "Droit d'auteur en matière de programme d'ordinateur" ([TRANSLATION] "Copyright as it pertains to computer programs") guideline so that it reflects the new orientation of software licence management:*

- *Designate the STI as the entity responsible for monitoring compliance with corporate software licensing on a city-wide basis;*
- *Review the role of the information security committee;*
- *Amend, if applicable, the other guidelines affected by the decision.* ***(Planned completion: September 2014)***

*Design and implement, in collaboration with the Direction des communications, a communication plan to announce changes to the "Droit d'auteur en matière de programme d'ordinateur" ([TRANSLATION] "Copyright as it pertains to computer programs") guideline.* ***(Planned completion: September 2014)***

*Submit an accountability report to the Direction générale on copyright compliance in the area of software licensing, initially by referring to available reports and later by using the tool that will be rolled out.* ***(Planned completion: January 2015)***

*In collaboration with the Direction générale adjointe of the Ville-Marie borough and in consultation with the boroughs, develop a business model to provide support for the workstations of all administrative units to ensure compliance with software licensing on a city-wide basis.* ***(Planned completion: April 2015)***

*Agree, together with the boroughs, on a deployment plan to roll out the tools necessary to manage the software licences of all workstations, including those in boroughs that were formed from former suburban cities.* ***(Planned completion: April 2015)***

## 4.1.2. Standardization of Commercial Software

### 4.1.2.A. Background and Findings

The STI standardizes software used within the city in order to reduce both incompatibilities among the various applications and the efforts expended to provide user support. This standardization also reduces the number of software products to provide support for and facilitates compliance with software licensing agreements.

To ensure that users do not install software without authorization, workstations are locked for users. This means that only one administrator with the required access privileges can install software on workstations.

The STI service centre installs most commercial software on workstations in response to a service request. As well, for part of 2013, a field was added to the request form to enter if the software for which the installation is requested represents a derogation from the city's standard.

Based on the information obtained from the STI, the overall rate of locked workstations is 89%, which might seem reasonable. However, at seven administrative units, representing roughly 17% of the workstations of the clients of the STI's Division services aux utilisateurs, only 57% of workstations are locked. In our opinion, unless specific reasons are given, this rate should be closer to the overall rate, so that there is better control over the installations and software licences used.

We also want to stress that the Division services aux utilisateurs of the STI has no authority over more than 3,800 workstations, or 22% of the city's workstation fleet. These workstations are used in some central departments and in most boroughs that were formed from former suburban cities. This has been the prevailing situation since the 2002 merger.

These elements, which relate to the scope of the control exercised by the STI, complicate both the process of keeping the software used standardized and the compliance of software licences.

Within the framework of a workstation operating system upgrade project (Windows 7), an inventory of the commercial software installed on workstations equipped with the abovementioned DSM Tool was produced. This inventory can help acquire a sufficient number of software licences as well as standardized versions that were selected for workstations under the jurisdiction of the STI. The project should be ongoing until December 31, 2014. It was therefore not completed at the time of our audit.

The inventory that was submitted to us is dated November 2013. It shows that several versions of a single software application were in use and that some unauthorized software was installed on workstations. This situation, in addition to posing a risk of noncompliance with software licences, could jeopardize operations and security. According to the information provided, this inventory work is not carried out regularly.

Although the DSM Tool is not deployed on all of the city's workstations, a periodic examination would permit both more rigorous monitoring of the software used and measurement of the degree of standardization and compliance.

Also, although the abovementioned guideline stipulates that only computer programs authorized by the city can be installed, the list of standardized products posted on the site provided for this purpose is not updated regularly.

In closing, while there is a list of unauthorized websites, there is no list of banned or prohibited software. Such a list would make it easier to ensure compliance with software licences and workstation standardization.

**4.1.2.B. Recommendation**

**We recommend that the Service des technologies de l'information periodically conduct an examination of the software installed on workstations in order to detect unauthorized software or software whose deviation from the standard is not approved.**

**Business unit's response:**

*[TRANSLATION] Preliminary step: implementation of recommendations 4.1.1.B. and 4.1.3.B. of the audit report.*

*Demand proof of purchase of software licences.*

*Establish a process for monitoring copyright compliance by introducing new roles and responsibilities.* ***(Planned completion: May 2015)***

**4.1.2.C. Recommendation**

**We recommend that the Service des technologies de l'information require administrative units to provide specific reasons for deviating from the principle of locking workstations, to ensure that these workstations are locked, if necessary, or to monitor them more closely in order to limit unauthorized, uncontrolled installations.**

**Business unit's response:**

*[TRANSLATION] Define the criteria for allowing deviations from the principle of locking workstations.*

*Update the "Postes de travail" ([TRANSLATION] "Workstations") guideline to clarify the computer security rules for all administrative units.*

*Circulate the rules for requesting deviations from standards and changes to the "Postes de travail" ([TRANSLATION] "Workstations") guideline.*

*Ensure that workstations are in compliance with the "Postes de travail" ([TRANSLATION] "Workstations") guideline.*

*Establish monitoring mechanisms:*

- *Phase 1: clients currently supported by the STI;*
- *Phase 2: other clients.* ***(Planned completion: October 2014)***

#### 4.1.2.D. Recommendation

**We recommend that the Service des technologies de l'information update, on the site provided for this purpose, a list of standardized software and establish a list of specifically prohibited software in order to help keep workstations standardized and limit unauthorized installations.**

**Business unit's response:**

*[TRANSLATION] Design and put online a Web page listing all standardized software programs along with their version numbers. Requests for the installation of any other software will be a deviation from the standard.* ***(Planned completion: June 2014)***

## 4.1.3. Adjustment of Software Licences

#### 4.1.3.A. Background and Findings

Above, we noted the existence of a workstation operating system upgrade project, which should ultimately make it possible to rectify breaches of various agreements with respect to compliance with commercial software licences installed on workstations. However, this project covers only software licences used on workstations that are under the authority of the STI and will be standardized. Moreover, some software products, in particular AutoCAD and the office automation suite, were excluded from this project.

Other projects are planned to adjust both Office Suite software licences and Microsoft server licences. For this purpose, as mentioned in the decision-making summary on the acquisition

and the regulation of Microsoft server infrastructure licences in August 2013, the city, after analyzing the situation, considered the purchase of software insurance from this supplier to be less cost-effective, in view of the city's product change cycles, than the current method, which is to make one-time purchases without insurance. We want to emphasize that, over the years, this treatment will increase the risk of discrepancies between the use of these products and compliance with software licences held by the city.

It should also be mentioned that an image containing the main software applications used within the city is available for technicians to facilitate the work of preparing new workstations. In particular, this image contains the office automation suite Office Standard, free software and software that is covered by a licence managed through individual access requests.

In the latter case, the request is made on the basis of needs, and licences are then managed by the STI officer responsible for the application in question. However, in the case of Office Suite, included in the image, or in the case of any other commercial software for which an installation request is made subsequently, no proof is required that a valid licence is held before the software in installed or the workstation is returned to the user. There is therefore a risk that software is being used for which no valid licence is held, since the STI does not have information on the licences held at the time of these installations. In fact, the proof of licence is in the hands of the administrative unit making the request, because it has the budgets to acquire them.

Projects are under way to rectify the situation with respect to some commercial software licences for both servers and workstations. However, these projects do not cover all administrative units or software products. Furthermore, for this type of software, no mechanism is currently in place to reduce the risk of software being installed without valid licences. Despite current efforts, such situations could arise again in the years to come.

We also want to stress that, for other lines of products, the STI made efforts to rectify the situation. In fact, in 2012, the officers responsible for some Oracle product licences undertook an internal audit requiring a disbursement of $2,766,349 in order to adjust the licences for this supplier.

**4.1.3.B. Recommendation**

**We recommend that the Service des technologies de l'information:**

- **determine and implement, once the software licence adjustment projects are completed, a process and tools to rapidly track down any discrepancies among the commercial licences held for software installed;**
- **implement solutions to rectify the situation with respect to administrative units and commercial software licences that are not included in projects in progress.**

**Business unit's response:**

*[TRANSLATION] Preliminary step: implementation of recommendation 4.1.1.B. of the audit report.*

*Define and establish a compliance report to be submitted every year by central services and the boroughs.*

*Assess the appropriateness of acquiring and implementing a software and software licence tool.*

*Confirm the role of the STI as a corporate entity responsible for monitoring copyright compliance in the area of software licensing.*

*Ensure that a software management system is established for the city as a whole.*

*Inventory all software in all administrative units.*

*Adjust the number of licences acquired to make it in line with the number of software applications used.*

*Establish a process for monitoring copyright compliance by introducing new roles and responsibilities.* ***(Planned completion: September 2015)***

## 4.2. Optimization of Licensing Agreements

Software licensing agreements can be optimized by acting on either of the following two variables: the price of a licence or the quantity of licences used. Like the abovementioned compliance with software licences, both the attainment of this optimization objective and the adoption of specific measures for expressing needs and procurement methods are dependent upon the control framework in place.

## 4.2.1. Control Framework

### 4.2.1.A. Background and Findings

As mentioned above, we identified, as part of this audit, a few principles that should be established to allow rigorous management of compliance with software licensing.

In particular, these principles require:

- Centralization of data on the licences held;
- Centralized management of compliance with licences;
- The use of a limited number of standardized products;
- Locking as many workstations as possible.

In addition to facilitating compliance, the adoption of these principles should further the achievement of the optimization objective. In fact, data centralization and compliance management are essential in order to obtain both clear, effective accountability and an overall profile of the software licence inventory. This information will make it possible to identify available licences, develop procurement strategies and improve the city's negotiating power vis-à-vis suppliers.

The use of a limited number of products can help increase the number of software licences obtained from a single supplier, thereby strengthening the power to negotiate with that supplier, instead of diluting this negotiating power by acquiring smaller quantities of a wide array of similar products.

Locking as many workstations as possible will help keep software products standardized by limiting uncontrolled installations.

In addition to the above recommendations, which concern both compliance with software licences and optimization of licensing agreements, implementation of the following two principles could further improve the situation:

- The formalization of periodic centralized acquisition strategies based on needs, products and opportunities, especially in the case of commercial software;
- The designation of an officer responsible for each supplier, especially in the case of corporate software.

At present, there are no comprehensive strategies for acquiring and managing software; instead, this is done on a case-by-case basis, through coordination meetings (governance tables), if necessary, when there are several stakeholders for a single supplier. However, this way of proceeding places a considerable burden on the decision-making process. The

designation of an officer responsible for each supplier would make it easier to both establish the acquisition strategies to be deployed and optimize the city's negotiating power.

Similarly, adopting better processes for acquiring all commercial software products would make it possible to consider procurement methods with a potentially beneficial effect on the prices paid, either through better negotiating power vis-à-vis suppliers, or through the negotiation of quantity discounts. With the current decentralized operation, there is a risk that the supplier knows more about how the city uses its products than the city itself. Under these conditions, it is more difficult to have advantageous negotiating power.

#### 4.2.1.B. Recommendation

**We recommend that the Service des technologies de l'information, in cooperation with the Direction de l'approvisionnement:**

- **evaluate the possibility, through a cost/benefit analysis, of applying the following principles in order to optimize software licensing agreements:**
  - **formalization of periodic centralized acquisition strategies;**
  - **designation of an officer responsible for each supplier;**
- **determine changes, if any, that need to be made to the various processes and implement them.**

**Business unit's response:**

*[TRANSLATION] Conduct a cost/benefit study, in collaboration with the Direction de l'approvisionnement, to assess the appropriateness of centralizing software licence acquisition and management.*

*Submit the results of the study to the Direction générale.*

*Establish the necessary processes for implementing the new orientations, including supplier management.* ***(Planned completion: December 2015)***

## 4.2.2. Application Access Requests

#### 4.2.2.A. Background and Findings

As mentioned at the beginning of this section, the optimization of software licences is dependent on methods for expressing needs for the quantity of licences used. We handled this issue by examining the process of making application access requests.

Some software, mainly commercial software, requires that the application be installed on the workstation so that it can be used. Other software, particularly corporate-type software, require that access profiles be created for users within the application so that they can use it.

The system established by the STI, especially for the latter type of software, requires that an access request be completed and approved by the employee's superior before it is sent back to the employee by the client officer of each administrative unit.

Some of these applications include access profiles with several functions that can be used, depending on the circumstances, to carry out various types of transactions within these systems. Some functions involve substantial unit licence costs. One of these applications is SIMON.

With respect to access to SIMON, a guideline was issued in February 2012 to notify all users that every week an automated procedure would be executed to record all functions of the application that each user had not accessed in the previous six months and at the same time remove these functions without notice. The guideline stipulates that, for any undesired removal, there must be a new access request along with a justification approved by the user's manager to ensure that functions are being used properly.

However, client officers who make access requests on behalf of users within their respective administrative units are not formally briefed that such licences can sometimes be very costly for the city. Administrative units do not pay any direct costs for making access requests. The STI must give priority to meeting a service availability need rather than respond to economic constraints, and it does not necessarily have all the information it needs to assess the relevance of the request. We want to stress that any optimization exercise is difficult to carry out when managers are not financially accountable for decisions made.

Moreover, no profile was established to enable client officers to carry out their duties. While these people do not necessarily need to know all the possible types of access, they should be better informed of the economic consequences of access requests, especially in the case of some licences that the STI might regard as more important. The creation of a predefined profile for the person responsible for carrying out the client officer's duties could also help provide a better framework for access requests.

#### 4.2.2.B. Recommendation

**We recommend that the Service des technologies de l'information:**

- **facilitate the work of the client officers by training them and by informing them of both the costs of various licences and the impact that access requests can have on the city's various systems;**
- **evaluate the possibility of introducing the user-pay principle for service or access requests made by administrative units.**

**Business unit's response:**

*[TRANSLATION] Develop a training program for client officers on the different costs associated with licences, the financial impacts of requests and possible changes to the acquisition process.* ***(Planned completion: October 2014)***

*Conduct an opportunity analysis serving to implement the user-pay principle for service or access requests submitted to the STI by administrative units, in collaboration with the Service des finances, the Service de la performance organisationnelle and the Direction générale adjointe of the Ville-Marie borough and in consultation with the boroughs with a view to optimizing the use of information technologies.* ***(Planned completion: June 2015)***

## 4.2.3. Reserve for Obsolescence

#### 4.2.3.A. Background and Findings

When suppliers cease to provide support for software products used by most employees, this can lead to considerable expenditures. We examined the measures adopted to address this issue.

In order to offset obsolescence in its computer workstation fleet, the STI uses a provision system, or reserve, established over a five-year period. This workstation obsolescence program ensures that, at the end of this period, all workstations used within the city are replaced by more modern equipment at a rate of one fifth of the workstation fleet per year.

However, although some commercial software licences must be replaced periodically because the supplier no longer offers assistance for products, there is at present no provision of any type to spread the costs of replacing these software licences over several years. Instead, the STI must create projects and acquire all software licence updates in the year covered.

These projects usually generate significant expenditures, because this software is deployed throughout the city's infrastructures. Over a one-year period, needs of this type could delay other high-priority computer projects that are currently in progress.

**4.2.3.B. Recommendation**

**We recommend that the Service des technologies de l'information consider the creation of a reserve for technological obsolescence for software and its applications, according to its usual replacement cycle.**

**Business unit's response:**

> *[TRANSLATION] Define a recurrent funding method for a reserve for the technological obsolescence of software based on its optimal replacement cycle, at the lowest possible cost.* ***(Planned completion: January 2015)***

## 5. General Conclusion

It should be recalled that the objective of our audit was to assess the extent to which the existing control framework ensures that:

- software licences provided by various suppliers are complied with;
- agreements concluded with software suppliers are established on the basis of needs under the best conditions.

Our reasons for examining this problem stemmed mainly from the fact that three software supplier audits conducted from 2009 to 2012 cost the city more than $2.7 million in non-compliance expenses for adjustment of software licences.

For the purposes of our audit, we divided software licences into two main lines of products for corporate software licences and commercial software licences. Corporate software includes all applications installed on a central server that can be accessed from a workstation by means of a user code, while commercial software includes all types of licences generally associated with a particular workstation. The Service des technologies de l'information (STI) is generally the entity responsible for managing corporate software licences on a city-wide basis. As for commercial software licences, each administrative unit that uses them pays for them out of its operating budget and is responsible for managing them.

In our opinion, the current control framework is inadequate for rigorous management of compliance monitoring of software licenses, especially in the case of commercial software. In fact, no centralized information system exists, on a city-wide basis, for the licences held

and used for the purpose of monitoring compliance with software licences. This deficiency can be explained by the fact that the responsibility for ensuring compliance with the copyright guideline as it pertains to computer programs is decentralized to each administrative unit, with the result that accountability is spread out. Furthermore, no comprehensive report on compliance monitoring is produced systematically and no formal accountability process exists in this area.

Moreover, the STI takes specific measures to facilitate or adjust compliance with commercial software licences, such as locking workstations. This measure is designed to prevent users from installing software without authorization while promoting the standardization of commercial software in use within the city. But some administrative units do not apply the principle of locking workstations with the same strictness, while more than 3,800 workstations, or 22% of the city's fleet of workstations, fall outside the jurisdiction of the STI.

Under the circumstances, the city runs the risk of incurring once again substantial expenses for failing to comply with software licences and having its image tarnished as a result.

It should be added that the abovementioned deficiencies also hinder the optimization of software licensing agreements. For example, because of the lack of an overall profile of the licence inventory, the city does not have the information it needs to rationalize the use of software licences, and its negotiating power vis-à-vis its suppliers is weakened.

We also noted that other deficiencies further highlight the city's inability to optimize its software licensing agreements. It should be noted that there are no formalization of periodic centralized acquisition strategies based on needs, products and opportunities, particularly with respect to commercial software. Moreover, there are no officers responsible designated for individual suppliers, especially corporate software suppliers, thereby undermining the city's negotiating power. Finally, the client officers who make application access requests on behalf of users in their administrative units are briefed very poorly on the costs of related licences.

Consequently, this exposes the city to the risk that it will be unable to take effective action on either of the variables upon which optimization of its software licensing agreements depends, their prices and the number used.

Implementation of the recommendations we set forth should strengthen the control framework, which will thereby enable the city to manage software licence copyright effectively and optimize its agreements in this area.