Open Data Initiative Audit

August 22, 2018

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The City Auditor's Office completes all projects in conformance with the *International Standards for the Professional Practice of Internal Auditing.*

Executive Summary

The City of Calgary established its Open Data Initiative in 2010. Open data has the ability to improve decision making; foster the growth of innovative businesses, products and services; and enhance transparency and accountability. A 2013 McKinsey report[1], with respect to open data states "unlocking innovation and performance with liquid information, identified more than $3 trillion in economic value globally could be generated each year through use of open data - increasingly open data is machine readable, accessible to a broad audience at little or no cost, and capable of being shared and distributed." The City's open data portal[2] allows free public access to the City's data subject to the open data portal's terms of use. In 2018, there were 262 datasets available on the open data portal with an average of 20,000 monthly visits. The City's Open Data Initiative has a potential to stimulate economic opportunities as a number of mobile applications have been created by developers using datasets from the City's open data portal.

The objective of this audit was to evaluate the effectiveness of current processes and governance practices that support successful achievement of the City's Open Data Initiative goals, based on key criteria from a best practice document produced by Canada's Open Data Exchange[3], to mitigate reputational risks related to data quality, security and noncompliance with Freedom of Information and Protection of Privacy Act (FOIP).

Results of our audit noted the Open Data Initiative governance practices and processes are effective to ensure completeness, accuracy, usability and adherence to FOIP for the published data. A complete data inventory of participating Business Units exists to determine dataset eligibility and priority. All data is published in machine readable format with metadata[4] and is maintained and updated on a regular basis.

However, the current open data strategy requires enhancement. The open data strategy lacks clarity on long term objectives and vision which in their absence raises questions on the necessary resource allocation to achieve the desired goals of this ongoing initiative. Without a clear vision and long term objectives the City may either overinvest or underinvest limited resources in this initiative. In addition, key performance indicators relevant to the achievement of the Open Data Initiative's objectives, and the Open Data Initiative costs and benefits are not established to measure if key objectives and targets are met. We raised recommendations to further enhance the open data strategy and to define, track and report performance measures related to the Open Data Initiative's objectives.

Five additional recommendations were raised to support further improvements including governance reporting processes; customer feedback process; and clarification of roles and responsibilities for data stewards.

Corporate Analytics and Innovation, with the support of Information Technology, has agreed to all seven recommendations and committed to implementing the recommendations by December 31,

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[1] Open data: Unlocking innovation and performance with liquid information -McKinsey Global Institute
[2] The Open Data Initiative supports the publication of City information as open data through a portal.
[3] Open Data Exchange: Open Data Blueprint - Helping municipalities think differently about open data.
[4] Data that serves to provide context or additional information about other data.

2019. The City Auditor's Office will monitor the status of commitments as part of its ongoing recommendation follow-up process.

1.0 Background

Open data is data that anyone can access, use and share. Governments, businesses and individuals can use open data to bring about social, economic and environmental benefits. Open data becomes usable when made available in a common, machine-readable format. Open data must be licensed as Canadian government information is automatically protected by copyright. A license agreement allows users to use the data in any way they want, including transforming, combining and sharing it with others, even commercially. Government release of open data can also make governments more transparent to citizens.

A 2013 McKinsey Global Institute research paper (Open data: Unlocking innovation and performance with liquid information) suggested: "Making data more "liquid" (open, widely available, and in shareable formats) has the potential to unlock large amounts of economic value, by improving the efficiency and effectiveness of existing processes; making possible new products, services, and markets; and creating value for individual consumers and citizens."

Council, through a notice of motion in July 2009, directed administration to prepare a report of how to make information more open and accessible. The report was adopted in March 2010 as part of the eGovernment Strategy, and administration was directed to conduct a pilot of the public data catalogue[5] with the re-launch of CITY online. The pilot was completed in late 2011, and transitioned to form the open data catalogue in 2012.

An eGovernment Strategy Advisory Committee was formed in January 2013 at the request of Council, to assist in the future planning and development of open data at The City. Corporate Analytics and Innovation (CAI) launched the City's open data catalogue in late 2013. During 2014, citizens participated in research and engagement initiatives focused on evaluating the open data catalogue and recommending improvements. The open data catalogue was redesigned to enhance its effectiveness for public as per research findings and feedback from stakeholders and the advisory group. An upgraded cloud based open data portal[6] was implemented in 2016, with enhanced data analysis features, new data visualization tools, and application programming interface capabilities for easier application development.

The Open Data Initiative is also important in achieving the objectives of the City's Digital Strategy, which was approved by Council in 2014. The City's Digital Strategy aims to create an open organization. The vision for the City's Digital Strategy is to use innovation and engagement to enable secure anytime, anywhere, access to an open government for today and tomorrow's citizen.

The City of Calgary's Open Data Initiative supports the City's position as an open government; enhancing transparency and taxpayer's participation; and improving services through innovation. In addition to open data societal benefits such as open and transparent governments, open data can

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[5] The open data catalogue was used to provide public access to data and allowed citizens to only download data.
[6] The city replaced the open data catalogue with a cloud based open data portal which hosts City data and allows citizens to interact with the data in more meaningful ways such as providing enhanced data analysis features, new data visualization tools, and application programming interface capabilities.

create economic value, such as the time savings Calgary commuters gain when they avoid congestion by using a traffic application based on open data.

Currently, CAI manages the Open Data Initiative and has a mandate to manage external licensing of City data and information as per criteria set out by The City's Information Management & Security Policy and its associated standards with the principles outlined in The City's Digital Strategy. These policies recommend all external access to City's data must have a data license agreement including terms of use or a formal data license agreement.

Calgary's Open Data Initiative has gradually increased the amount of data available for public access since its launch in 2010. Currently, the open data portal offers public access to 262 sets of data representing 22 Business Units' (BUs) activity. Future expansion of open data is planned with an expectation to represent the majority of BUs.

The City of Calgary's Open Data Initiative supports the publication of City information as open data through a portal which is intended for use, reuse and redistribution by anyone under the simplified terms of an open data license. This raw data (often referred to as source data), can be used for a wide variety of purposes, including software development, where data is used to create applications for mobile devices and computer programs.

The Open Data Initiative audit was included in the 2017/2018 annual audit plan due to the high impact of reputational risk the initiative could have on The City. In order to publish open data, clear processes related to privacy concerns, Freedom of Information and Protection of Privacy Act (FOIP) compliance, and data quality management are critical to effectively mitigate associated reputational risk.

1.1 Risk Assessment

During the planning phase of the audit, we interviewed staff in CAI and in Resilience and Infrastructure Calgary. Additionally, we performed a walkthrough to determine the high level process of evaluating and publishing a dataset on the open data portal. We utilized key criteria, from Canada's Open Data Exchange (ODX), to assess potential risks. The ODX is a best practices document or blueprint for governments across Canada to launch their own open data initiatives or to encourage those already engaged with open data to become more ambitious in launching new and improved data portals. A risk matrix was created to map key criteria to the identified risks and has been included in Appendix A.

2.0 Audit Objectives, Scope and Approach

2.1 Audit Objective
The objective of this audit was to evaluate the effectiveness of current process and governance practices within the City's Open Data Initiative, based on key criteria from a best practice document produced by ODX, to mitigate risks related to data quality and data security.

2.2 Audit Scope
Our audit focused on 262 datasets published on the open data portal during the period January 2017 to April 2018.

2.3 Audit Approach
We evaluated the Open Data Initiative against the criteria identified in Appendix A by conducting interviews with CAI staff, and review of current documents, processes, procedures and strategy which support the sample of datasets recently published.

As CAI currently manages the Open Data Initiative, CAI's management team was our primary contact for the audit. Information Technology (IT) and three additional BUs were contacted during the fieldwork process to obtain their perspective of the Open Data Initiative.

3.0 Results

The audit evaluated the City's Open Data Initiative based on key criteria from a best practice document produced by ODX. We assessed the effectiveness of current processes and governance of the Open Data Initiative which are in place to manage privacy concerns, FOIP compliance, and data quality; which in turn can help to mitigate reputational risk associated with the publication of open data. The results of the audit are discussed with relation to the ODX criteria (refer to Appendix A).

3.1 Open Data Strategy & Vision
We reviewed the recently developed open data strategy which defines the Open Data Initiative's goals including increased transparency, improved public participation and enhanced services for citizens.

Our interviews with the Leader IP Access and Marketing and inspection of documents confirmed the open data strategy was presented to the Information Management and Security Governance Committee (IM&S Governance Committee) and Digital Governance Committee (DGC). However, the Open Data Initiative's objectives, long term vision and targets are not articulated in the open data strategy, which are required to convert goals into specific and measureable actions; and to achieve Senior Management and BUs support, and adequate resourcing for effective implementation of the initiative. We recommended to articulate the Open Data Initiative's objectives, long term vision and targets into the open data strategy; and obtain Administrative Leadership Team endorsement to ensure proper engagement, and support for this corporate level initiative (Recommendation #1).

3.2   Communications Plan

During our fieldwork, work was in progress to finalize the 2018 communication plan. We reviewed the 2016 and 2017 communications plans and noted the plans outline specific communication tactics such as promotional video, newsletters and social media articles to provide awareness of the Open Data Initiative. The 2017 plan also suggests to use Hackathons and Community of Practice meetings to promote the Open Data Initiative.

Our testing confirmed the open data team conducted Hackathons in 2016 and 2018, and held Community of Practice meetings in 2017 and 2018 to increase awareness of the Open Data Initiative. Overall communication tactics outlined in the 2016 communication plan were partially implemented; and the communication tactics outlined in the 2017 plan were not executed. We also identified the communications plans need improvement to incorporate roles and responsibilities for effective execution of the communication plan. We recommended revision of the 2018 Communications Plan as per the revised open data strategy including description of roles and responsibilities; and obtaining the Governance Committees support to implement the plan (Recommendation #4).

3.3   Data Release Process

Our testing confirmed that data inventories of participating BUs exist to assess which datasets qualify to be published as open data. In addition, existing processes to collect, verify and publish datasets are effective to prevent the release of inaccurate or incomplete data. We determined the open data team releases the datasets through an established process in accordance with FOIP requirements and the City's Information Management and Security Policy. Our testing confirmed data is published as open data (machine readable with associated metadata) and is updated and maintained through predefined intervals and process.

We reviewed 13 process narratives and 14 process flow charts, which are intended to outline all detailed steps regarding dataset collection, data evaluation and processing. We noted these process documents were last updated in 2012, and did not reflect changes from the new portal implementation in 2016. We recommended an update of the process documentation to mitigate the risk of inconsistent and inefficient practices (Recommendation #7).

Throughout our testing we also identified an opportunity for improvement, which could enhance effectiveness. We tested a sample of seven datasets of seven BUs to determine the effectiveness of the data release process. Our testing confirmed the data release process consider data quality, usability, confidentiality and characteristics through several process steps. However, the records for compliance with the data release process steps, such as, checks for data quality and privacy are maintained informally. We recommended an opportunity of improvement to develop a data release process checklist of the significant process steps to ensure completeness, consistency, usability and accuracy of the published data in case of staff turnover.

3.4   Terms of Use

Our testing confirmed the Open Data Initiative's terms of use with legal warnings and disclaimer are available on the open data portal to mitigate the risk of misuse and misinterpretation of the City's data by users. The terms of use encourage users to reuse,

publish and distribute the data for any lawful purpose but do not grant rights to access personal data, intellectual property or records not available under applicable laws.

3.5 Feedback Process

There is no formal process in place to collect and evaluate internal and external stakeholders' feedback regarding dataset suggestions by the portal users, usability feedback from a post-secondary institution, and feedback from customer surveys, Hackathons and Community of Practice meetings.

Based on a cross review of feedback received from stakeholders (i.e. dataset suggestions, Community of Practice meetings, 2018 customer survey, 311, Hackathons) we concluded the collected feedback was not formally evaluated, tracked or implemented. A formal feedback process to evaluate, track and implement customer's suggestions will facilitate continuous improvement of the initiative. A recommendation to define, implement and communicate a process to collect, evaluate and implement internal and external feedback for the Open Data Initiative was raised (Recommendation 5).

3.6 Roles and Responsibilities

The Data Strategists and the Leader IP Access and Marketing roles and responsibilities with respect to the open data are defined in their respective Job Evaluation Questionnaires (JEQs). The City's Information Management and Security Policy also defines high level responsibilities of BUs related to the open data. However, there is no formal document to specifically outline roles and responsibilities of data stewards engaged in the Open Data Initiative. Our interviews with the open data team and IT; and three other BUs confirmed there is a lack of clarity regarding roles and responsibilities for the data stewards. Clarity of roles and responsibilities for data stewards, will help to ensure data quality and integrity. As open data is only one component of the data stewards' role, we passed this recommendation to the Chief Information Technology Officer for action (Recommendation #6).

3.7 Performance Measures & Governance

Two performance metrics showing the percentage of City's BUs participating in the Open Data Initiative; and percentage of customers satisfied with data formats of the published data on the open data portal were reported in the 2016 and 2017 Year End Accountability Reports. These two performance measures met their targets. Additional performance metrics specific to six open data portal related metrics (such as number of downloads and page views) and the number of staff hours spent on the Open Data Initiative are also tracked by the open data team.

The nine existing key performance indicators (KPI's), however, do not align with the open data strategy and they do not track and monitor the costs and benefits of the Open Data Initiative. We were pleased to learn in our interviews with the Leader IP Access and Marketing work is in progress to evaluate current KPIs; and to develop and review additional KPI's, with an expected completion date of early 2019.

We recommended this revision work should include consideration of performance measures that reinforce the Open Data Initiative's objectives, long term vision and value in alignment with the revised open data strategy (Recommendation #2).

An ODX best practice is the inclusion of open data stakeholders on advisory panels or working committees to guide the strategy implementation. Through our review of minutes from the Analytics Calgary Steering Committee meetings, we confirmed the open data team attended Analytics Calgary Steering Committee meetings during 2016 and 2017 to report critical milestones. We also reviewed the IM&S Governance Committee and DGC Terms of Reference and determined IM&S Governance Committee and DGC are responsible to ensure the Open Data Initiative aligns with the corporate goals.

Our interviews with the Leader IP Access and Marketing indicated the open data team attends IM&S Governance Committee and DGC meetings on an ad-hoc basis, and there was no evidence formal reporting was done in 2017 for IM&S Governance Committee and DGC regarding the Open Data Initiative status and challenges. No additional reporting was done in 2018, though, the open data strategy was presented to IM&S Governance Committee and DGC in March and April of 2018 respectively. As a result, we recommended utilizing an appropriate reporting/governance forum to report the Open Data Initiative challenges and progress and define and implement the appropriate reporting criteria (Recommendation #3).

Further information on the recommendations is provided under section 4.0. We would like to thank staff from CAI and IT for their assistance and support throughout this audit.

4.0 Observations and Recommendations

4.1 Open Data Strategy and Vision

The Open Data Initiative's objectives, long term vision, and targets are not articulated in the open data strategy. Undefined or uncommunicated objectives poses the risk of a lack of support and participation from Senior Management and BUs which may result in the Open Data Initiative not achieving its business objectives. A defined open data strategy supports the Open Data Initiative as it provides clear direction allowing progress to be tracked. A strategy also gives teams the framework to assess and make decisions and provides the mechanism for turning ideas into actions.

Our review of the open data strategy noted Open Data Initiative's goals are included in the open data strategy. We observed Open Data Initiative's objectives are outlined in other documents such as the 2017 Communications Plan and the Tactical Plan. Interviews with the Team Leader IP Access and Marketing and Director, Corporate Analytics and Innovation indicated the vision and mission of the Corporate Analytics and Innovation BU also represents the mission and vision of the Open Data Initiative. However, objectives, long term vision, and targets are not incorporated or referenced in the open data strategy.

A revised version of the open data strategy was presented to the IM&S Governance Committee and DGC in 2018. Interviews with the open data team indicated the committees did not ask for any further revision of the strategy, and the open data team considers this as approval of the open data strategy. The open data strategy and its related Tactical Plan are not formally approved. As this is a corporate wide initiative the strategy should be endorsed by the Administrative Leadership Team (ALT) to ensure proper engagement, ownership, guidance and support for this corporate level Open Data Initiative. A formal endorsement from ALT will ensure acceptance of desired outcomes which is fundamental to success.

Recommendation 1
The Director, Corporate Analytics and Innovation to:
1. Incorporate the Open Data Initiative's objectives, long term vision and targets into the open data strategy.
2. Present the strategy to the Administrative Leadership Team and obtain their endorsement for the revised open data strategy.

Management Response

Agreed.

Action Plan	Responsibility
1. Update open data strategy document to include objectives, vision and targets into the strategy. 2. Present revised open data strategy to ALT for acceptance and approval. This presentation would include updated KPI and identified investments that may be required to continue to support the Open Data Initiative.	Lead: Team Lead, Intellectual Property Access and Marketing (IPAM) Support: Director of CAI, Manager of Innovation, Data & External Access (IDEA) and Open Data Strategist (IPAM) Commitment Date: 1. December 31, 2018 2. March 31, 2019

4.2 Performance Measures and Tracking

Performance measures relevant to the Open Data Initiative's objectives, long term vision and value are not defined and reported. Performance measures are used to measure outcomes and results to determine the effectiveness and efficiency of initiatives. Failure to measure the relevant performance measures may promote the perception the initiative is not meeting its objectives which may impact the sustainability of the Open Data Initiative. The tracking and monitoring of performance measures help to determine whether the initiative realizes value. Further, the City has an obligation to utilize taxpayer funds in an effective manner.

The Open Data Initiative only tracks and reports two KPIs/performance metrics as required in the 2015-2018 Action Plan. These metrics are assessed on an annual basis and are outlined below:
• Percentage of City of Calgary BUs that have datasets in the open data catalogue.
• Percentage of customers satisfied with data formats delivered in the open data catalogue.

The targets for these KPIs were met in 2017. Additional performance metrics are also tracked in the open data portal such as the number of downloads. However, the KPI's tracked above do not tie to the open data strategy nor do they consider the costs and benefits of the Open Data Initiative.

Interviews with the Leader IP Accesses and Marketing indicated all costs associated with the Open Data Initiative are not tracked, although the Open Data Initiative tracks some costs, such as, the number of staff hours spent on the Open Data Initiative. Currently, the open data team is not able to assign a dollar amount/value to the Open Data Initiative. The open data team is in the process of developing and reviewing more relevant KPI's to track progress and report throughout the year. As per the Leader IP Accesses and Marketing, the KPI analysis will be completed by the fall of 2018; and implementation of the new KPI's will be completed in early 2019.

Recommendation 2

Leader IP Access and Marketing to:

1. Define and track performance measures that reinforce the Open Data Initiative's objectives, long term vision and value as defined in the revised open data strategy.
2. Report the benefits of open data (such as KPIs and initiative costs) to Senior Management on a regular basis.

Management Response

Agreed.

Action Plan	Responsibility

1. Complete KPI evaluation that is aligned with RBA by Q4 2018. Incorporate into revised open data strategy document. Upon approval of open data strategy by ALT, deploy for 2019 – 2022 business cycle.
 	
2. Report annually performance outcomes to IM&S Governance Committee beginning Q1 2019.
	Lead: Team Lead, IPAM
	
	Support: Manager, IDEA, Open Data Strategist
	
	Commitment Date:
	1. Complete KPI evaluation –December 31, 2018.
	  • Incorporate KPIs evaluation into revised Open Data Strategy document-March 31, 2019.
	  • Deploy KPIs for 2019 – 2022 business cycle-June 30, 2019.
	2. Report annually performance outcomes to IM&S Governance Committee-March 31, 2019.

4.3 Governance & Reporting

The IM&S Governance Committee and DGC have a mandate to oversee policies, standards and initiatives to ensure strategic alignment with corporate goals and needs. The Open Data Initiative currently reports to these two committees on an ad hoc basis, and therefore may not be receiving full benefit from governance oversight.

In addition to IM&S Governance Committee and DGC, the open data team stated they attended multiple committee meetings including Analytics Calgary Steering Committee during 2016. Analytics Calgary is a corporate wide initiative to enable data driven decision making. The open data team attended the Analytics Calgary Steering Committee four times in 2017 to present critical milestones for the Open Data Initiative. The Open Data Initiative status and challenges were not reported to IM&S Governance Committee and DGC during 2017. Although, the open data team did attend one IM&S Governance Committee and one DGC meeting in 2018 to present the open data strategy.

Lack of oversight poses a risk of misalignment of the Open Data Initiative with corporate goals and needs resulting in reduced support from stakeholders.

<u>Recommendation 3</u>
The Director Corporate Analytics and Innovation to:
1. Identify the appropriate reporting/governance forum to report the Open Data Initiative challenges and progress.
2. Define and implement the appropriate reporting criteria including the reporting frequency (e.g. bi-annually).

<u>Management Response</u>

Agreed.

Action Plan	Responsibility
1. Confirmed governance to align under IM&S Governance Committee (now done). 2. Present proposal to IM&S Governance Committee recommending an annual reporting frequency to review, report and make recommendations to the committee on matters reflective of Open Data Initiative. 3. Present annual updates to IM&S Governance Committee.	<u>Lead</u>: Team Lead IPAM <u>Support</u>: Director CAI, Manager IDEA <u>Commitment Date</u>: 1. Completed 2. September 30, 2018 3. December 31, 2019

4.4   Communications Plan Implementation

Communications plans were established by Customer Service and Communications for 2016 and 2017 to provide awareness of the Open Data Initiative and to communicate the benefits of Open Data Initiative to key stakeholders, however, the communication plans were not fully implemented.

The 2016 communication plan tactics were partially executed, and as per our interview with the Team Leader IP Access and Marketing, the 2017 plan was not implemented due to organizational and process changes within Customer Service and Communications. The open data team is planning to implement the 2017 communication plan in 2018.

We observed some aspects of the 2017 communication plan were implemented such as posting articles on Twitter, Facebook and myCity in 2018. Other tactics mentioned in the communication plan and in the 2017 Tactical Plan to increase awareness and external community engagement is to leverage Hackathons, and Community of Practice meetings. We noted the open data team, to increase awareness, held Hackathons during 2016 and 2018 and Community of Practice meetings in 2017 and 2018. Currently, the open data team has two full time resources dedicated to the Open Data Initiative. Adequate resourcing may be a challenge to fully execute the communications plans.

Our review of the communication plans also noted roles and responsibilities are not clearly defined to execute the communication plan. Further, the open data team is not leveraging internal champions to promote the Open Data Initiative's objectives.

Ineffective communication poses the risk of initiative failure and lack of participation/interest from BUs and other stakeholders. The Open Data Initiative needs to be effectively communicated to ensure all stakeholders have a clear understanding of the value of Open Data Initiative.

Recommendation 4
The Director Corporate Analytics and Innovation to:
1. Revise the 2018 communications plan to reflect the revised open data strategy. The revised communication plan should also include roles and responsibilities.
2. Identify Open Data Initiative internal champions and leverage them to promote Open Data Initiative.
3. Present the revised communications plan to the appropriate Governance Committee to obtain required support.
4. Implement the 2018 communications plan.

Management Response

Agreed.

Action Plan	Responsibility
1. Bring up to date the 2018 communications plan to reflect current state of Open Data Initiative; including defining roles and responsibilities of the data stewards and IPAM. 2. Engage internal champions identified ~ that will accentuate present and future Open Data Initiative's objectives. 3. Present updated communications plan to IM&S Governance Committee for acceptance and approval. *Together with presentation in Section 5* Present 2018 completed items and Communications plan with CS&C leading the process and IPAM responsible for timelines and content for 2019. 4. Track via performance measures in section 1 the effectiveness of communication plans and actions.	Lead: Team Lead, IPAM Support: Director CAI, Manager IDEA, Open Data Strategist, IPAM Commitment Date: 1. 2018 communications plan revision- September 30, 2018 2. Engagement of internal champions- December 31, 2018 3. Present updated communications plan and 2018 completed items – March 30, 2019 4. Track via performance measures the effectiveness of communication plans –December 30, 2019

4.5 Feedback Process

There is no formal process to collect and evaluate internal and external feedback for the Open Data Initiative. Absence of a formal feedback process for improvement poses the risk of lack of support and participation for the initiative, and missed opportunities for improvements. The ODX criteria recommends to have a feedback mechanism in place to continuously improve the Open Data Initiative.

We reviewed evidence of some activities which were done to collect internal and external feedback and suggestions. However, these activities were limited in effectiveness since the majority of suggestions were not evaluated, tracked, and implemented:

- We reviewed six datasets on GitLab (software to manage datasets) and noted the dataset suggestions are primarily limited to requests for new datasets and suggestions regarding the Open Data Initiative and process improvement was not provided.
- Usability feedback was collected from a post-secondary institution and through a customer survey. However, we did not see any evidence to determine whether feedback was analyzed to identify and implement any initiative improvements.
- A Community of Practice meeting was held in 2017, but the participants' feedback was not documented. The open data team hosted a Community of Practice meeting recently in May 2018.
- There were nine 311 inquiries in 2017 for Innovation Data and External Access (a division of CAI), and only four were related to the Open Data Initiative, mainly to request new datasets or to ask general questions. There was no specific feedback regarding improvement of the open data process and Open Data Initiative.
- Interviews with the Leader IP Accesses and Marketing indicated social media is used to collect stakeholders' feedback. However, we did not see any evidence to validate social media is used to collect stakeholders feedback; and
- A Hackathon was held in 2016, however we did not see any evidence to validate if any suggestions were implemented. A second Hackathon was held by the open data team in May 2018.

Overall, we were not able to see any evidence to validate how feedback is analyzed for initiative improvements. A formal process to collect and analyze feedback for improvements does not exist. Limited resourcing might be a reason as to why a feedback process has not been defined and implemented.

Recommendation 5

The Director Corporate Analytics and Innovation to:
1. Define, implement and communicate a process to collect, evaluate and implement internal and external feedback for the Open Data Initiative.
2. Present the progress and any associated risks of implementing a feedback process to the Governance committee/Administrative Leadership Team.

Management Response

Agreed.

Action Plan	Responsibility
1. Develop management control process that centralizes all feedback activities; including but not limited to: a. Date of inquiry b. Description c. Action taken d. Date closed. IPAM document process to follow. 2. Present process to IM&S Steering Working Committee for acknowledgement and awareness. *Together with presentation in Section 4* Establish frequency of updates to report on at IM&S Governance Committee.	Lead: Team lead, IPAM Support: Manager, IDEA, Open Data Strategist, IPAM Commitment Date: 1. Develop management control process- December 31, 2018. 2. IPAM document process and Present process to IM&S Steering Working Committee-March 30, 2019. • Establish frequency of updates to report on at IM&S Governance Committee-March 30, 2019.

4.6 Roles and Responsibilities

Roles and responsibilities related to the Open Data Initiative are not defined for all stakeholders. There is no formal process document (such as a RACI chart or process flow diagram) available to define roles and responsibilities of all stakeholders involved in the Open Data Initiative. Effective execution of key activities may not occur if roles and responsibilities are not defined and adequately communicated. There is a risk of duplication, poor communication and Open Data Initiative inefficiency.

The Information Management and Security Policy includes the responsibilities associated with information management, including open data; however, the document fails to address responsibilities specific to the Open Data Initiative.

JEQs are available for the Open Data Strategist and the Lead IP Access & Marketing. The JEQs adequately described major accountabilities and responsibilities. However, our interviews with the open data team and IT; and three other participating BUs indicated roles and responsibilities of data stewards with respect to the Open Data Initiative are not defined or consistent. If data stewards' roles and responsibilities are not clearly defined there is a risk the integrity and quality of the data could be impacted.

Recommendation 6
 The Chief Information Technology Officer in consultation with the Information Management and Security Governance Committee to define, document and communicate roles and responsibilities for data stewards taking into consideration the Open Data Initiative.

Management Response

Agreed.

Action Plan	Responsibility
Update the responsibilities for the Information stewards' role in the Information Management and Security Policy to include more information, clarify responsibilities associated with data creation and maintenance, ensuring alignment with the Open Data Initiative. The updated policy will be reviewed and approved by the Information Management and Security Governance Committee with final approval from the Administrative Leadership Team.	Lead: Chief Information Technology Officer Support: IT Manager, Enterprise Support Systems Commitment Date: June 30, 2019

4.7 Process documentation

The data release process documentation (Process Narratives and Process Flow Charts) is not up-to-date to reflect current practices which are in use since the implementation of the new open data portal in 2016. Incomplete and inaccurate process documentation poses a risk to the corporation that processes may not be consistently applied. Updated documents promote consistent practices and ensures completion of all process steps.

The Open Data Initiative has a total of 13 process narratives and 14 process flow charts. These steps are broken into 5 categories:
1. Collect Dataset
2. Perform Evaluation and Data Processing
3. Create Product in On-line Catalogues
4. Monitor and track Utilization Patterns
5. Provide Dataset Maintenance.

Review of the process documentation revealed these have not been updated since 2012. However, the new open data portal was implemented in 2016, and thus there is a resulting misalignment between the 2012 documentation and current practices.

We noted the Open Data Strategists are experienced with the Open Data Initiative, and therefore have the required understanding and knowledge of the data release process. This reduces the overall risk of inconsistent and incomplete practices. However, in the event of employee turnover key knowledge is lost and there is a risk critical steps may not be followed and updated documents may mitigate this risk.

Recommendation 7
Leader IP Access and Marketing to update the process documentation (narratives and flow charts) to reflect the current Open Data Initiative on a regular basis.

Management Response

Agreed.

Action Plan	Responsibility
Work has commenced on updating existing process documentation that reflects current practices and processes resulting from a change in technology.	<u>Lead</u>: Team Lead, IPAM <u>Support</u>: Open Data Strategist, IPAM <u>Commitment Date</u>: March 30, 2019

Appendix A

#	Risk	Inherent Risk	Key Criteria -Open Data Blueprint by ODX	Criteria in Place	Recommendation (if applicable)
1	Unclear goals and objectives of the Open Data Initiative.	H	A defined open data strategy supports the Open Data Initiative.	Partial	Recommendation #1
2	Open Data Initiative is not very successful as Departmental and BUs participation is not 100%.	M	The Open Data Initiative is effectively communicated internally to ensure BUs have a clear understanding.	Partial	Recommendation #4
3	Unaware of City data that could be published on the portal which could increase the usability and/or value of the open data portal.	M	Completion of a data inventory of currently participating BUs to determine which datasets exist and who is responsible for them.	Yes	
4	Release of inaccurate and inconsistent data or data that is unusable. Confidential or highly restricted information (personally identifiable, IP data, Infrastructure data and financial information), is released on open data portal.	H	A data release process through an evaluation framework that considers the quality, usability, confidentiality and characteristics of data. A data process exists to anonymize the data or manage elements that raise red flags. Compliance with data protection laws and policies.	Yes	Recommendation #7
5	Data is not useable or high quality and does not lend itself for reuse or analysis for internal and external users.	H	Data is published as open data, i.e. machine-readable, with metadata (adequately describes the data), under an Open License. Data is maintained and updated on a regular basis.	Yes	

#	Risk	Inherent Risk	Key Criteria -Open Data Blueprint by ODX	Criteria in Place	Recommendation (if applicable)
6	Users misinterpret or misuse the data to cause scandal or cause harm to City's Assets and Infrastructure.	H	The terms of use for the data are accessible from the open data portal.	Yes	
7	Data is difficult to understand and use, or not relevant to users.	M	Feedback mechanisms and internal/external communication to improve Open Data Initiative.	Yes	Recommendation #5
8	Unclear/undefined roles and responsibilities of data owners, stewards and SMEs which may impact the success of the Open Data Initiative.	H	Roles and responsibilities assigned to the Open Data Initiative are clear.	No	Recommendation #6
9	The initiative does not add value for taxpayers and the City does not realize any value either.	H	The financial costs and benefits associated with the publication and consumption of open data are tracked and monitored. Reporting the benefits of open data, such as KPIs and cost savings to senior management. Reporting suggestions or challenges to Open Data Initiative governance committees.	Partial	Recommendation #2 and #3