DECEMBER 2019

CITY OF CHICAGO
OFFICE OF INSPECTOR GENERAL

AUDIT OF THE DEPARTMENT OF INNOVATION AND TECHNOLOGY'S MANAGEMENT OF INFORMATION TECHNOLOGY INVESTMENTS

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TO THE MAYOR, CITY COUNCIL, CITY CLERK, CITY TREASURER, AND RESIDENTS OF THE CITY OF CHICAGO:

The City of Chicago Office of Inspector General (OIG) has completed an audit of the Department of Innovation and Technology's (DoIT) management of the City's investment in information technology. The objective of this audit was to determine if DoIT manages information technology investments in accordance with best practices outlined in the United States Government Accountability Office's Information Technology Investment Maturity framework. Specifically, we examined how DoIT ensures that the City selects the right technology projects, manages them effectively, and evaluates performance after completion.

Based on the audit results, OIG concluded that DoIT did not consistently adhere to best practices for project selection, which increased the risk that projects may cost more, take longer to complete than expected, and not meet requirements. OIG also determined that DoIT does not consistently and accurately monitor project performance, nor does it consistently evaluate performance after completion or use lessons learned to inform future projects.

It is critical that DoIT fully implement a process for selecting projects that not only meet departments' needs and aligns with the City's strategic goals, but also allocates limited City resources in the most efficient manner possible. Moreover, the Department needs to provide effective project management to ensure that expected benefits are delivered on budget and on schedule. Finally, a consistent and rigorous approach to evaluating past performance is necessary to identify lessons learned and use those lessons to improve future projects. DoIT agreed with our recommendations and has already begun implementing corrective actions to improve the City's project selection, management, and evaluation processes.

We thank DoIT staff and management for their cooperation in this audit. We also thank staff from various City departments for providing information regarding their experience with IT projects.

Respectfully,

Joseph M. Ferguson
Inspector General
City of Chicago

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ACRONYMS

DoIT	Department of Innovation and Technology
GAO	United States Government Accountability Office
IT	Information Technology
ITGB	Information Technology Governance Board
ITIM	Information Technology Investment Maturity Model
OBM	Office of Budget and Management
OIG	City of Chicago Office of Inspector General
PMO	Project Management Office

City of Chicago
Office of Inspector General

AUDIT OF THE DEPARTMENT OF INNOVATION AND TECHNOLOGY'S (DOIT) MANAGEMENT OF INFORMATION TECHNOLOGY INVESTMENTS

DoIT did not estimate complete cost, benefit, and risk information before selecting projects

DoIT did not identify performance goals for projects

DoIT did not consistently monitor project spending

5 out 6 projects reviewed took longer than scheduled to complete

I. EXECUTIVE SUMMARY

The City of Chicago Office of Inspector General (OIG) has completed an audit of the Department of Innovation and Technology's (DoIT) management of the City's investment in information technology. The objective of this audit was to determine if DoIT manages information technology investments in accordance with best practices outlined in the United States Government Accountability Office's Information Technology Investment Maturity (ITIM) framework. Specifically, we examined how DoIT ensures that the City selects the right technology projects, manages them effectively, and evaluates performance after completion.

Effective management of an IT portfolio requires consistent and repeatable organizational processes.[1] While certain projects may succeed without consistent enterprise-wide management, such successes are more often attributable to exceptional individual efforts, rather than effective, efficient, and repeatable institutional processes.

To assess the consistency and repeatability of DoIT's processes, OIG compared documentation of DoIT's processes and the outcomes of projects, such as budget or schedule information, to GAO's ITIM framework. The framework describes five stages of process maturity. At the lowest level—Stage 1—organizations make IT investment decisions in an unstructured, ad hoc manner. This suboptimal approach may result from a lack of well-designed formal procedures, inconsistent implementation of such existing procedures, or a combination of the two. At the highest level—Stage 5—organizations have optimized their processes, and IT investments drive strategic organizational change. DoIT is in Stage 1 and is working toward Stage 2.

A. CONCLUSION

DoIT did not consistently adhere to best practices for project selection, which increased the risk of projects delivering fewer benefits, costing more, and/or taking longer than expected to complete. In addition, DoIT's data collection practices hamper effective monitoring and evaluation of project and portfolio performance, thereby limiting the Department's ability to identify opportunities for improvement.

B. FINDINGS

DoIT designed a scoring tool to assess projects on a common set of predefined criteria, with the goal of ranking projects and selecting those that would most benefit City operations. OIG review of eight projects started in 2016 and 2017 determined that DoIT did not use the ranking process at all. Notably, DoIT did not have a complete inventory of the projects initiated during the years under review. Moreover, DoIT completed the required assessment prior to selecting only three of the eight OIG-reviewed projects. As a result, the City may have selected projects that did not best meet the departments' specific and the City's overall needs. The Department did not

[1] United States Government Accountability Office, "Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity," March 2004, 2, accessed October 11, 2019, http://www.gao.gov/assets/80/76790.pdf.

consistently collect critical information needed to rank projects and make selection decisions. In addition, the Chicago Police Department, Chicago Fire Department, and Office of Emergency Management and Communications each declined to use the project selection process DoIT developed. Therefore, DoIT could not rank these departments' projects against those proposed by other departments for purposes of setting priorities for spending City resources.

DoIT did not ensure that launched projects met performance goals and did not consistently monitor progress. Five of the six projects reviewed took longer than scheduled to complete, with two taking more than twice as long as originally planned. Moreover, DoIT did not have a process or criteria for determining whether ongoing projects were meeting user department needs and should be continued or terminated.

DoIT did not evaluate projects across its portfolio and, therefore, did not adjust its investment processes based on lessons learned. The Department did not consistently evaluate project performance after project completion. Some project managers told us that, while they typically discuss lessons learned from projects, those discussions are not memorialized or used to improve project and portfolio management.

C. RECOMMENDATIONS

OIG recommends that DoIT rank all proposed projects using predefined criteria. The Department should also develop procedures for collecting more robust cost, benefit, and risk data to facilitate comparative evaluation of the merits across departments, i.e., City-wide. DoIT should work with the Office of Budget and Management (OBM) and the Mayor's Office to ensure that the various boards, groups, and other entities authorized to oversee IT strategy and spending are fully engaged in maximizing the return on the City's investments throughout the project lifecycle.

DoIT should also set performance goals related to cost/benefit and risk for each project, monitor performance against those goals, and report on performance to the appropriate governance body. Finally, project oversight should include evaluation of outcomes and long-term performance. Taking a broad view of the City's portfolio of projects will improve the Department's decision making at the proposal stage.

D. DOIT RESPONSE

In response to our audit, DoIT agreed with OIGs recommendations and stated that it has undertaken changes that will address the findings. These changes include updating relevant policies, requiring project managers to adhere to all written policies for selection, monitoring and evaluation of projects, achieving full engagement by the IT Governance Board, and requiring all City departments to engage in the standardized IT oversight processes.

The specific recommendations related to each finding, and DoIT's response, are described in the "Findings and Recommendations" section of this report.

II. BACKGROUND

DoIT is "responsible for ensuring that the City's technology infrastructure is robust and works with City departments to design and implement technology improvements."[2] The Department also oversees the City's geographic information systems and data science programs, and sets information security standards through its Information Security Office.

A. PROJECT MANAGEMENT OFFICE

DoIT's Project Management Office (PMO) bears primary responsibility for coordinating the design and implementation of technology improvements. As described on the City website, "the PMO,

- assigns project managers to manage key IT projects;
- sets project management standards and implements best practices;
- provides project management process support to all staff members that manage projects;
- provides transparency into the performance of the project portfolio; and
- supports project portfolio management processes, including project ideation, selection, and prioritization."[3]

PMO staff oversee software and project management contractors, serving as the point of contact for these vendor-provided projects. PMO's Charter states the Office "provides value to the City of Chicago by ensuring that,

- scarce resources are invested in projects that align with the City's business and technology goals and strategies;
- projects are managed in a repeatable, standardized manner using industry best practices; and
- project objectives and outputs meet business needs and meet or exceed end users' expectations."

The Charter also includes a mission statement that states, "Through standardization and collaboration, we deliver quality projects efficiently, faster, and at minimal cost to our internal clients (City departments) and external clients (Chicago residents, businesses, and visitors)." This reflects DoIT's appreciation of the value of selecting the most beneficial projects, carefully managing them, and evaluating their efficacy once implemented.

[2] City of Chicago, Office of Budget and Management, "2019 Budget Overview", 66, accessed October 11, 2019, https://www.chicago.gov/content/dam/city/depts/obm/supp_info/2019Budget/2019BudgetOverview.pdf.
[3] City of Chicago, Department of Innovation and Technology, "Planning, Policy and Management", accessed October 11, 2019, https://www.chicago.gov/city/en/depts/doit/provdrs/business_developmentmanagementpmo.html.

PMO also developed a Handbook that defines its policies and procedures and guides the work of its project managers. The Handbook is based on practices recommended by the Project Management Institute, which generally align with GAO's ITIM framework.

B. INFORMATION SECURITY OFFICE

DoIT created the Information Security Office (ISO) in 2013 to provide "enterprise security monitoring and response" across City departments.[4] The responsibilities of ISO include "[developing and enforcing] an information security strategy, framework, policies and procedures that align City of Chicago business need, legislative and regulatory requirements and industry best practices."[5] The PMO Handbook states that ISO,

- reviews an initial security assessment for projects prior to approval;
- monitors project adherence to the security requirements policies; and
- provides a security testing process to ensure that projects involving sensitive data meet security requirements.

As discussed below in Finding 2, DoIT stated that ISO has been unable to fulfill these responsibilities on a consistent basis due to staffing shortages. According to DoIT, hiring and retaining individuals in these positions has presented an ongoing challenge due to high industry demand for skilled employees.

C. CITY OF CHICAGO IT GOVERNANCE STRUCTURE[6]

The City's Information Technology Governance Policy "establishes a standard citywide process for requesting, prioritizing, and selecting proposed IT investments." The Policy creates a Technology Strategy Group (TSG) that "is comprised of leadership from all City departments who will work to collaboratively set citywide digital strategy, and identify technologies that deliver community benefit, optimize resources, improve service delivery, reduce risk, and build capacity." DoIT stated that the group has met once so far, but anticipates it meeting quarterly going forward. The full Information Technology Governance Policy is attached as Appendix A to this report.

The Policy also establishes an IT Governance Board (ITGB) which reviews all requests for new IT investments or expansions of existing projects and makes decisions that align with the strategy set by TSG. ITGB, "is comprised of staff from the Mayor's Office, the Office of Budget & Management, DoIT and consulted by the Departments of Finance and Procurement Services." The board is responsible for approving "requests for funding, regardless of source, for new

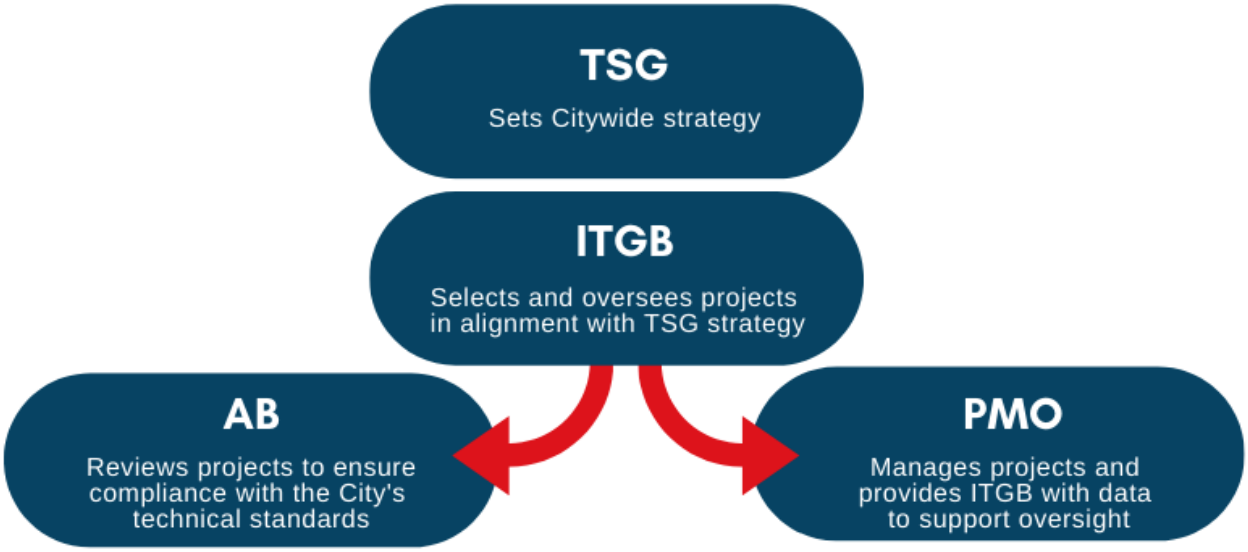
[4] City of Chicago, Department of Innovation and Technology, "Information Security Office", accessed October 11, 2019, https://www.chicago.gov/city/en/depts/doit/provdrs/security_and_datamanagement.html.
[5] City of Chicago, Department of Innovation and Technology, "Information Security Office", accessed October 11, 2019, https://www.chicago.gov/city/en/depts/doit/provdrs/security_and_datamanagement.html.
[6] See pages 3-4 of the IT Governance Policy found in Appendix A for quotes of descriptions.

projects and services, as well as for subsequent phases to previously approved projects," and monitoring "project health and outcomes on a monthly basis." As discussed below in Finding 1, ITGB held its first meeting in August 2018.

The Information Technology Governance Policy assigns DoIT's **IT Architecture Board** the role of "set[ting] enterprise technology standards" to ensure that project technologies are compatible across platforms. The PMO Handbook states that projects will not move forward to implementation without Architecture Board review for technological alignment.

Finally, DoIT's **Project Management Office (PMO)** supports ITGB and the governance process by scoring the financial impact of all projects prior to selection by ITGB and reporting to the Board on the health of ongoing projects. PMO "is responsible for reviewing all new project requests and associated business cases and integrates the decisions of the TSG and ITGB into new and ongoing programs and projects". Figure 1 illustrates the relationships between these various boards and offices.

FIGURE 1: City IT governance structure



Source: OIG illustration based on City of Chicago Information Technology Governance Policy.

D. IT INVESTMENT BEST PRACTICES

The United States Government Accountability Office "Information Technology Investment Management (ITIM): A Framework for Assessing and Improving Process Maturity" lays out a "model composed of five progressive stages of maturity that an agency can achieve in its IT investment management capabilities."[7] This model states "just as ITIM can be used as a tool for organizational improvement, it can also be used

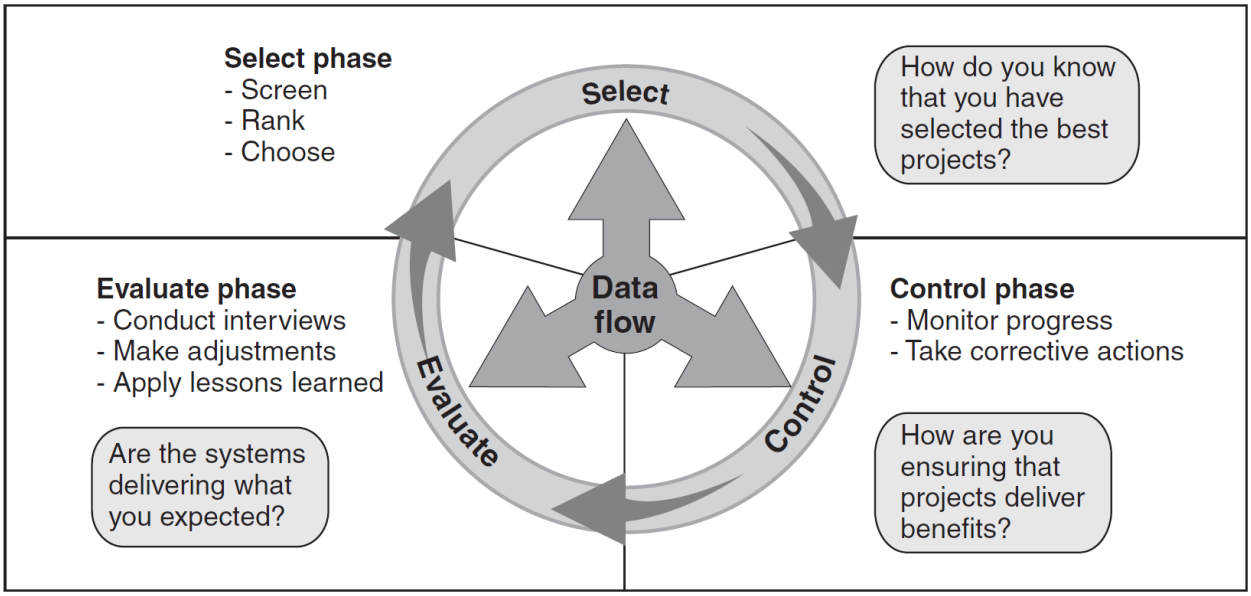
[7] United States Government Accountability Office, "Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity," March 2004, Highlights, accessed October 11, 2019, http://www.gao.gov/assets/80/76790.pdf.

as a standard against which to judge the maturity of an organization's IT investment management process."[8]

As illustrated in Figure 2, ITIM defines three fundamental phases of investment in IT projects: select, control, and evaluate. An organization moving through these phases answers the following fundamental questions:

- How do you know that you have selected the best projects?
- How are you ensuring that projects deliver benefits?
- Are the systems delivering what you expected?

FIGURE 2: Select, control, and evaluate phases of IT investment



Source: GAO ITIM.[9]

During the select phase, the organization analyzes the risks and benefits of and ranks potential projects before committing significant funding to any of them. As a selected project progresses during the control (i.e., implementation) phase, the organization assesses whether the project remains likely to deliver the expected benefits on time and on budget, and makes any changes needed to ensure those outcomes. After project implementation, during the evaluate phase, the organization determines whether the investment is delivering the expected benefits or whether adjustments are necessary, and documents lessons learned to improve future projects.

[8] United States Government Accountability Office, "Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity," March 2004, 26, accessed October 11, 2019, http://www.gao.gov/assets/80/76790.pdf.
[9] United States Government Accountability Office, "Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity," March 2004, 8, accessed October 11, 2019, http://www.gao.gov/assets/80/76790.pdf.

ITIM frames an organization's maturity in terms of how well it performs in each phase. More mature organizations devise and follow repeatable, effective, and efficient processes. It is important that organizations engage in continual assessment, affirmatively choosing to reselect—i.e., continue to work on—or deselect projects based on whether they are providing sufficient value. Because it is often hard for organizations to halt a project once launched, even when the dedicated resources could be put to better use, the framework emphasizes the reselection and deselection processes. ITIM also stresses the importance of an organization developing its capabilities for portfolio management, and the key role that investment boards play in organizational IT governance. Figure 3 outlines the characteristics of each ITIM maturity stage.

FIGURE 3: Five stages of maturity in the ITIM framework

Stage 5: Leveraging IT for strategic outcomes

- The organization has mastered the selection, control, and evaluation processes and now seeks to shape its strategic outcomes by benchmarking its IT investment processes relative to other "best-in-class" organizations.

Stage 4: Improving the investment process

- The organization is focused on evaluation techniques to improve its IT investment processes and portfolio(s), while maintaining mature selection and control techniques.

Stage 3: Developing a complete investment portfolio

- The organization has developed a well-defined IT investment portfolio using an investment process that has sound selection criteria and maintains mature, evolving, and integrated selection, control, and evaluation processes.

Stage 2: Building the investment foundation

- Basic selection capabilities are being driven by the development of project selection criteria, including benefit and risk criteria, and an awareness of organizational priorities when identifying projects for funding. Executive oversight is applied on a project-by-project basis.

Stage 1: Creating investment awareness

- Ad hoc, unstructured, and unpredictable investment processes characterize this stage. There is generally little relationship between the success or failure of one project and the success or failure of another project.

Source: GAO ITIM.

An initial indicator that an organization is maturing is the implementation of consistent, repeatable investment processes. This consistency should span all project types, and all project managers should follow the same processes to achieve consistent outcomes. Ad hoc or

inconsistent project management are hallmarks of a less mature organization. The City is at Stage 1—the lowest stage of organizational maturity—and is working toward Stage 2.

III. FINDINGS AND RECOMMENDATIONS

FINDING 1: BECAUSE DOIT DID NOT FOLLOW BEST PRACTICES FOR SELECTION, PROJECTS MAY DELIVER FEWER BENEFITS, COST MORE, AND TAKE LONGER THAN EXPECTED TO COMPLETE.

Although DoIT's project selection processes generally aligned with ITIM best practices, the Department did not consistently follow those processes. Most importantly, DoIT did not assess and prioritize all proposed IT projects using predefined criteria.

DoIT designed a scoring tool to assess projects on a common set of predefined criteria, with the goal of ranking projects and selecting those that would most benefit City operations.[10] OIG review of eight projects initiated in 2016 and 2017 determined that DoIT did not use the ranking process at all. Notably, DoIT did not have a complete inventory of the projects started during the years under review. Moreover, DoIT conducted the required assessment prior to selecting only three of the eight OIG-reviewed projects.[11] As a result, the City may have selected projects that did not best meet the departments' specific and the City's overall needs. The projects selected may deliver fewer benefits, cost more, and take longer than expected to complete. Figure 4 identifies each project we reviewed. Detailed descriptions of the projects are provided in Appendix B.

[10] The scoring tool is incorporated into the IT Governance Policy enclosed in Appendix A.
[11] DoIT retroactively completed the scoring tool after selecting a fourth project.

FIGURE 4: Eight OIG-reviewed projects initiated in 2016 and 2017[12]

Project Name	Description	Cost Estimate
311 Modernization	Replace legacy system that supports 311	$35,000,000
Hyperion Budget System	Replace legacy budget system	$5,731,514
Array of Things	Install sensors to collect data for research and public use	$4,250,000
Utility Tax	Integrate water and sewer taxes into City's water billing system	$2,100,036
Chicago Early Learning	Create portal for early-learning enrollment	$1,000,000
House Share Registration System (Phase 1)	Create system to register shared-housing rental units	$698,770
House Share Registration System (Phase 2)	Add functionality not addressed in Phase 1	$495,000
Citrix Enterprise Services Upgrade	Upgrade hardware and software environment that hosts over 20 City applications	$362,393

Source: OIG review of DoIT project documentation.

Although the PMO Handbook required project managers to score and rank projects, DoIT management did not enforce these requirements, instead allowing project managers to rely on their own experience. ITIM recommends that institutions establish an IT Investment Board to oversee IT investment management and ensure adherence with internal policies and procedures, including those related to project selection. The City's ITGB would have fulfilled this role, but it never met between 2015 and August 2018. Although ITGB began to meet in 2018, it did not provide Citywide oversight for purposes of setting the 2019 budget. The Chicago Police Department (CPD), Chicago Fire Department (CFD), and Office of Emergency Management and Communications (OEMC) declined to use the project selection process DoIT developed, selecting their own IT projects without ITGB review or approval for 2019 funding.[13]

In addition, OIG determined that DoIT did not consistently collect the information needed to accurately assess and rank proposed projects using cost/benefit and risk criteria.

[12] DoIT did not have a complete inventory of projects initiated in 2016 and 2017. OIG selected a targeted sample of eight projects from among those known to have launched during this time period.
[13] For example, CPD spent at least $1.1 million on computers, storage, and support from Dell in 2016, and $3.2 million on ShotSpotter hardware and software in 2017.

According to GAO, informed investment decisions are best supported by quantitative data on cost/benefit and risk.[14] DoIT did not estimate costs and benefits for any of the eight OIG-reviewed projects, and it assessed the risk for only one (by retaining a vendor for that purpose). Although the Department consistently estimated the cost of paying vendors for design and implementation, it did not estimate full lifecycle costs for any project. DoIT never considered the cost of internal labor, equipment, or materials. Similarly, the Department estimated ongoing costs to maintain and support a system for only one of the eight projects.[15] Figure 5 shows the cost information collected by DoIT for each project OIG reviewed. Appendix B has detailed descriptions of the projects.

FIGURE 5: DOIT did not estimate full project costs

Project Name	External Costs	Internal Costs	Maintenance and Support
311 Modernization	Yes	No	Partial[16]
Hyperion Budget System	Yes	No	No
Array of Things	Yes	No	No
Utility Tax	Yes	No	No
Chicago Early Learning	Yes	No	No
House Share Registration System (Phase 1)	Yes	No	No
House Share Registration System (Phase 2)	Yes	No	No
Citrix Enterprise Services Upgrade	Yes	No	No

Source: OIG review of DoIT project documentation.

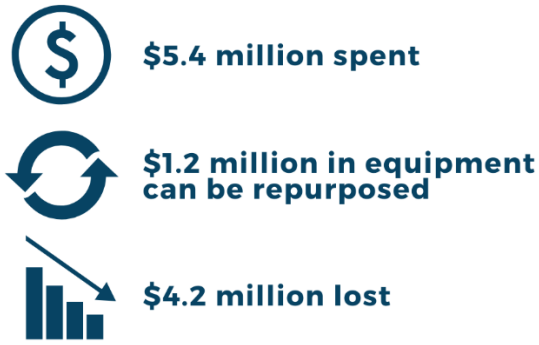
Although DoIT's current scoring tool aligns with GAO's recommendation to set predefined selection criteria, it does not require quantified estimates of costs, benefits, or risks. The tool asks reviewers to award up to 100 points across 9 categories. One category relates to cost, two relate to benefits, and two relate to risk. However, all could be scored without any quantified estimate. For example, the "Expected Return" category instructs reviewers to award 10 points if they agree that, "the project will result in a product or service that will generate revenue." But reviewers are not required to reference supporting analysis or otherwise justify their score.

[14] GAO acknowledges the value of qualitative measurements of benefits, noting "Benefits must be defined and quantitatively and qualitatively measured in outcome-oriented terms."
United States Government Accountability Office, "Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-making," February 1997, 13, accessed October 11, 2019, http://www.gao.gov/special.pubs/ai10113.pdf.

[15] GAO notes that "the amount of rigor and types of analyses that are conducted will depend, in part, on the size of the investment and the amount of risk." For example, a full cost-benefit analysis may not have been warranted for the relatively low-cost Citrix Enterprise Services Upgrade. With that in mind, GAO recommends defining the level of analysis required based on project type, cost, and risk.
United States Government Accountability Office, "Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-making," February 1997, 42, accessed October 11, 2019, http://www.gao.gov/special.pubs/ai10113.pdf.

[16] The estimate included the cost of maintaining the old 311 system during the transition to the new system. It did not include maintenance or support costs for the new system.

The City's unsuccessful effort to implement the Hyperion Budget System illustrates the potential effect of DoIT's inconsistent selection process. In 2017, OBM identified funding for a new system, and launched a project to replace the City's budget system with Hyperion. OBM estimated that engaging vendors to design and implement the new system would cost the City $5.7 million. However, neither DoIT nor OBM performed a risk assessment or compared the costs and benefits of the project to those of other proposed projects prior to selection.



In 2019, OBM terminated the Hyperion project after concluding that using the software could result in an incomplete, inaccurate, or unbalanced budget. According to OBM, of the $5.4 million spent on the project, just $1.2 million was used to buy equipment that the City can repurpose. Thus, the net loss was $4.2 million.[17] In addition, the City now must continue to use its outdated budget application, which is no longer supported and has limited reporting capabilities. OBM stated that although it initially believed Hyperion would meet its business needs, it discovered during implementation that the software's functionality did not live up to expectations.

As discussed below in Finding 2, terminating a project may be appropriate if it no longer meets business needs, introduces excessive risk, or will exceed tolerable cost thresholds. However, when DoIT and OBM disagreed about whether to terminate the Hyperion project, OBM declined to meet with all project stakeholders. As of July 3, 2019, DoIT and OBM had not met to diagnose the root cause of the project failure. OBM stated to OIG that it is not sure whether the loss was avoidable. Rigorous adherence to a consistent selection process may have avoided or mitigated the loss experienced by the City in this instance.

RECOMMENDATIONS

To improve the project selection process, DoIT should:

1. Require all project managers to follow the PMO Handbook for selection activities. Standardization will promote consistent, repeatable performance of duties. In particular, DoIT should require project managers to use predefined criteria to rank all projects before selection.
2. Develop procedures for collecting more robust cost/benefit and risk data to improve comparisons between potential projects. DoIT may choose to base the level of rigor required on the relative cost and risk of the project. The Department should work with OBM to budget for projects through their full life cycle, not only year-to-year, and improve its scoring tool by requiring reviewers to provide justifications for their scores.

[17] This assessment of the loss does not account for internal City resources expended.

3. Work with OBM and the Mayor's Office to ensure that ITGB continues to meet at least quarterly to perform its role in the selection process. Furthermore, all City departments—including CPD, CFD, and OEMC—should be required to submit projects to ITGB for selection.

MANAGEMENT RESPONSE[18]

1. *"The project managers have been following the PMO Handbook for selection activities since Spring of 2018. In the Spring of 2018, the ITGB established new selection criteria.*
2. *"The ITGB was re-established in the Spring of 2018. The IT Governance Board (ITGB) approves requests for funding, regardless of source, for new projects and services, additional investments and upgrades in existing products and services, as well as for subsequent phases to previously approved projects. This body ensures that requested investments align to strategies identified by the TSG (Technology Strategy Group) and reviews requests to scale successful pilots or modify purchasing-related policies. The ITGB also monitors project health and outcomes on a monthly basis, providing oversight and having the ability to cancel projects that are not meeting established objective outlined in the Cancellation Process section below. The ITGB is comprised of staff from the Mayor's Office, the Office of Budget & Management, DoIT and consulted by the Departments of Finance and Procurement Services. The group meets monthly in person and may meet virtually as needed. See Item 1 for the intake form that ask the requestor for cost, benefit, and risk information. Currently the criterion is outlined, and the project managers score the projects based on a defined numeric system. The PMO will work with the ITGB to discuss establishing text fields for the project managers to justify their scoring.*
3. *"The ITGB was originally tasked to have quarterly meetings. Beginning March of 2019, the ITGB has been meeting monthly due to the magnitude of project requests. Since March of 2019, the only month that a meeting didn't occur was in October, due to budget hearings.*

   All departments are required to submit their IT requests to the ITGB for selection."

[18] Management Response Attachments can be found in Appendix C.

FINDING 2: DOIT DID NOT ENSURE THAT PROJECTS MET PERFORMANCE GOALS.

Based on our analysis of a sample of six projects completed in 2016 and 2017, OIG found that DoIT did not consistently monitor performance during project development and implementation.[19] Figure 6 describes each project and provides the original cost estimate. Descriptions of these completed projects are included in Appendix B.

FIGURE 6: OIG reviewed six projects completed in 2016 and 2017

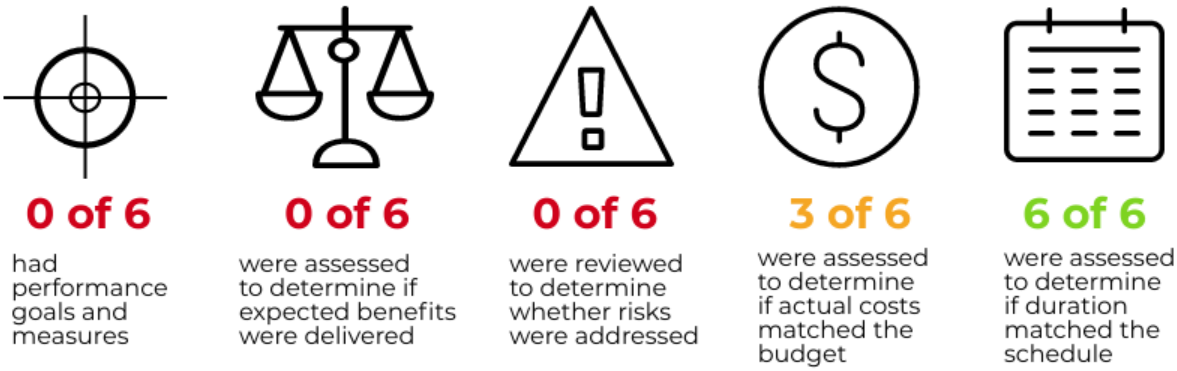
Project	Description	Budget
eProcurement	New system to allow all City departments to manage procurement electronically	$5,676,227
Voice over Internet Protocol (Phase 1)	Replace legacy phone system for 3,000 users	$3,000,000
Utility Tax	Integrate water and sewer taxes into water billing system	$2,100,036
House Share Registration System (Phase 1)	Create system to register shared-housing rental units	$698,700
Paperless	New system to manage business license applications online	$690,207
WindyGrid 2.0	System that supports "situational awareness and incident monitoring and response"[20]	$249,480

Source: OIG review of DoIT project documentation.

DoIT did not consistently monitor the performance of these six projects. ITIM recommends that organizations monitor whether a project delivers expected benefits on schedule and on budget. In addition, organizations should track the extent to which any risks identified are managed. DoIT's PMO Handbook required project managers to monitor compliance with budget and schedule targets and suggested a menu of ways to measure risk mitigation and benefit achievement. DoIT tracked schedule adherence for all six projects but assessed only three for whether they stayed within budget. Additionally, the Department did not define performance measures, or monitor benefits delivery or risk management, for any of the six projects we reviewed. Figure 7 summarizes the number of projects for which DoIT completed five core monitoring activities.

[19] DoIT did not have a complete inventory of projects completed in 2016 and 2017. OIG selected a targeted sample of six projects from among those known to have concluded during this time period.
[20] The project included a public facing component, called OpenGrid, that made some of WindyGrid's data and functionality publicly available at https://opengrid.io/.

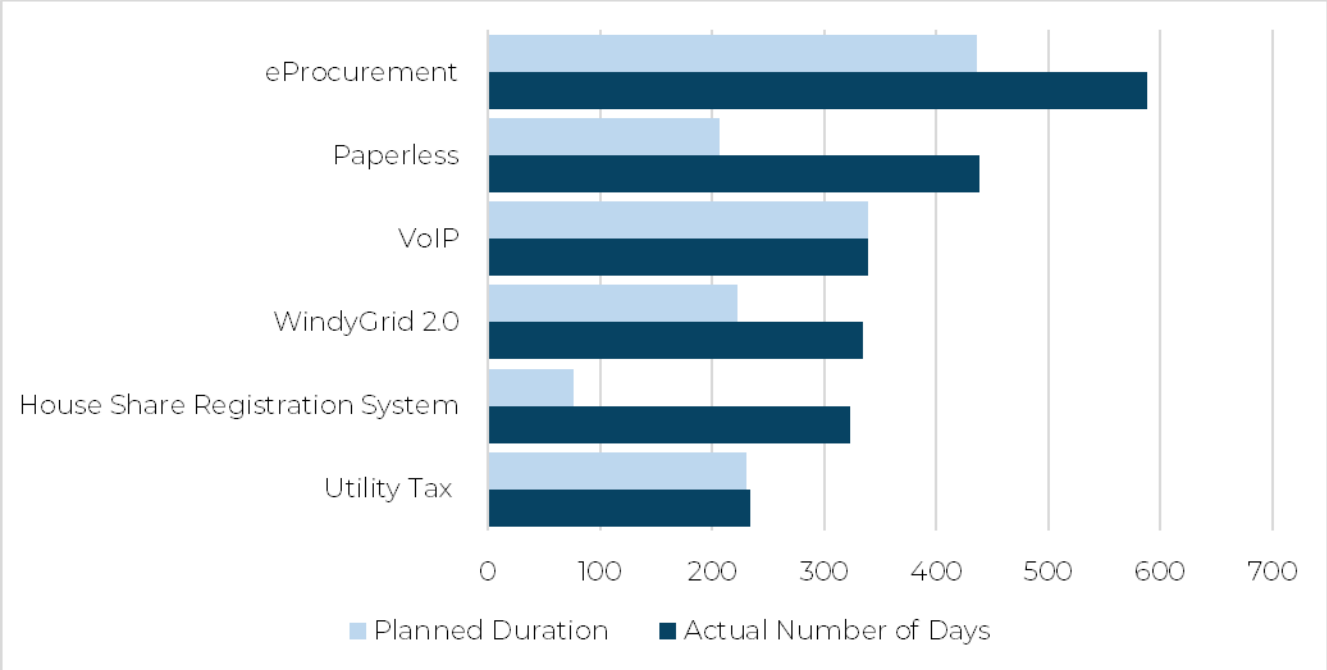
FIGURE 7: DOIT did not consistently monitor project performance



Source: OIG review of DoIT project documentation.

DoIT provided reliable data for only one performance measure: schedule adherence. Five of the six projects took longer than scheduled to complete. Two took more than twice as long to complete as originally planned. Figure 8 compares actual duration to original schedule for each project.

FIGURE 8: Most projects took longer than planned to implement



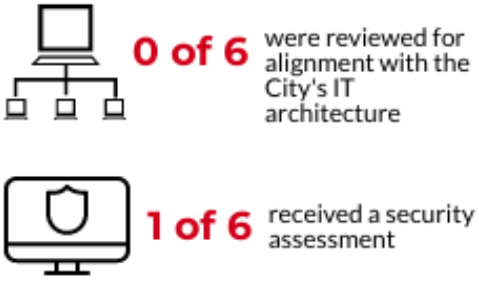
Source: OIG review of DoIT project documentation.

One of the projects that took more than twice as long than originally planned to complete was development and launch of the City's House Share Registration System. The system was needed to administer new registration and licensing requirements for short-term residential rental hosts

and platforms, such as Airbnb, passed by City Council on June 22, 2016.[21] Even as completed, however, that system did not deliver the full functionality defined in the original project scope. DoIT tried to develop a single system by December of 2016 for all companies connecting guests and hosts via internet platforms. This system would have required the companies to send data to the City. According to DoIT, one of the companies insisted instead that the City retrieve data from its system. To accommodate this company, the City built a custom interface, causing significant project delays. In August 2017, DoIT delivered a system capable of registering home shares associated with the company. This partial completion, however, exhausted the funding budgeted for the entire project. As a result, DoIT retroactively labeled the project "Phase 1" and issued a new task order request for $495,000 to build custom interfaces for other home sharing companies.

According to ITIM, collecting data on actual performance is critical because it allows decision makers to consider whether to continue or terminate projects. In addition to lacking the data needed to make informed decisions, DoIT did not have a defined process for considering whether existing projects were meeting goals, and whether it should continue to fund the projects, correct the issues impeding progress, or terminate the projects. The City's Information Technology Governance Policy appropriately assigns to ITGB the responsibility for monitoring the health and outcomes of existing projects and authorizes the Board to terminate those "not meeting established objectives." However, at that time, ITGB had neither determined what criteria to use, nor ensured that project managers collect the necessary data to make those decisions.

OIG also found that DoIT did not consistently collect information needed to identify and manage project risks. DoIT did not ask its IT Architecture Board to review any of the six projects' compliance with the City's IT architecture.[22] Omitting this review creates the risk that a project will not be fully compatible with the City's existing architecture or will inhibit efforts to move towards a target architecture in the future. Furthermore, DoIT's Information Security Office (ISO) performed a full security assessment for just one of the six projects we reviewed. This omission introduced the risk of security vulnerabilities going undetected. DoIT stated that it has been unable to staff the ISO at the level needed to perform full security assessments for all projects.



[21] City of Chicago, Business Affairs and Consumer Protection, "Shared Housing and Accommodations Licensing," accessed October 21, 2019, https://www.chicago.gov/city/en/depts/bacp/supp_info/sharedhousingandaccomodationslicensing.html.
[22] According to the City's Information Technology Governance Policy, the Architecture Board is responsible for establishing standards—the IT architecture—to "align platforms, products, and services" with strategic goals.

RECOMMENDATIONS

To improve monitoring processes, DoIT should:

1. Require that all project managers follow the PMO Handbook, as stated in the previous finding. Managers should,
    a. monitor cost/benefit and risk performance for all projects; and
    b. submit all projects to the Architecture Board and ISO for review.
2. Update the PMO Handbook and/or the City's IT Governance Policy to define criteria for determining whether to terminate underperforming projects.
3. Ensure that ITGB continues meeting on at least a quarterly basis and fully inhabits its role of providing project oversight. DoIT and OBM should work with ITGB to ensure that project managers collect the relevant data to enable ITGB to perform these functions. At a minimum, DoIT should provide data related to actual cost/benefit, risk, and schedule performance.
4. Work with OBM to ensure ISO is adequately staffed.

MANAGEMENT RESPONSE[23]

1. *"The PMs have been required to follow the procedures outlined in the PMO Handbook since the Spring of 2018.*
    a. *As part of the project process, the PMs keep track of the project risks. They also monitor the project performance and notify the PMO Director and or/ the CIO/CTO/appropriate Program Manager if there is an issue that is impacting the project's performance/budget.*
    b. *The Architecture Board meets bi-weekly. During this time, the PMs, Program Managers and /or the PMO Director discusses the projects. Often times additional meetings are held depending on the project. The ISO review was added in the Spring of 2019. The new ISO provided guidelines and a process of when to engage them in projects.*
2. *One of the outcomes of the April 2019 ITGB meeting was to add language to the IT Governance Policy to address termination of underperforming projects. As a result, this language was added and disseminated to the Department Commissioners and ITSCs in the updated to IT Governance Policy in June of 2019. This language was also added to the PMO Handbook in April of 2019 and disseminated to the PMs. Please see Item 2 for the language that was added to the PMO Handbook and the IT Governance Policy.*
3. *"The ITGB was originally tasked to have quarterly meetings. Beginning March of 2019, the ITGB has been meeting monthly due to the magnitude of project requests. Since March of 2019, the only month that a meeting didn't occur was in October, due to budget hearings.*

[23] Management Response Attachments can be found in Appendix C.

The ITGB created a report based on the information they want to review for the projects. This report is reviewed at each meeting. Please see Item 3 for the reporting fields.

4. *"Security resource needs have been identified for ISO, and DoIT will work with OBM to execute a hiring plan for the targeted resources."*

FINDING 3: DOIT DID NOT CONSISTENTLY EVALUATE PROJECTS AND ADJUST ITS INVESTMENT MANAGEMENT PROCESSES BASED ON LESSONS LEARNED.

DoIT did not consistently evaluate individual project performance after implementation. Indeed, the Department did not assess vendor performance or document lessons learned for any of the six projects OIG reviewed. Two project managers said that, while they typically discuss lessons learned, those discussions are not memorialized or used to improve project management.

During the audit, DoIT collected incomplete project information in SharePoint, which DoIT used to facilitate project management.[24] As of June 7, 2018, of the 271 projects in SharePoint, 168, or 62%, were missing budget information and 219, or 81%, were missing actual expenditure information.[25] The site contains only budget and expenditure information for the current year; this prevents DoIT from assessing whether it is meeting budget targets over the life of projects. In addition, the SharePoint site does not include actual end dates, which prevents DoIT from calculating the extent to which projects finished late. DoIT stated that the PMO was not yet fully capable of tracking performance because it lacked the necessary project management software. In 2019, the Department began to implement software to capture more complete performance data.

ITIM recommends assigning personnel to ensure that sufficiently detailed information to support decision making is available, understandable, and utilized by decision makers. DoIT management has not assigned a specific individual to fulfill this role.

Because the City lacks information on project performance, it cannot take the next step: evaluation of portfolio-level performance. According to GAO, as organizations mature, they progress from managing individual projects into managing a well-rounded investment portfolio. ITIM states that, "taking a portfolio perspective enables the organization to consider its investments in a comprehensive manner, so that the investments address not only the strategic goals, objectives, and mission of the organization, but also the impact that projects have on one another."[26]

Because ITGB did not meet in 2016 or 2017, it could not hold DoIT accountable for collecting project and portfolio performance data. Moving forward, the Information Technology

[24] SharePoint is a web-based collaboration system used for document storage and organization.
[25] A small number of these projects may have just begun and therefore correctly did not reflect any expenditures. 105, or 48% of the 219 records without any expenditures had been closed, and thus should have included expenditure data.
[26] United States Government Accountability Office, "Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity," March 2004, 63, accessed October 11, 2019, http://www.gao.gov/assets/80/76790.pdf.

Governance Policy requires ITGB to engage in monthly project monitoring, but it does not specifically require evaluation of performance after completion. The Policy also does not address portfolio-level evaluation, identify outcomes ITGB would expect DoIT to report, or describe how lessons learned should be used to improve future projects.

RECOMMENDATIONS

To improve project evaluation, DoIT should:

1. Work with ITGB to define the processes and criteria for evaluating project and portfolio-level performance.
2. Fully implement its new project management tool and ensure its staff consistently records the performance data required by ITGB.
3. Ensure that project managers evaluate individual performance for all projects after implementation, and document their lessons learned.
4. Assign someone to ensure the information collected meets the needs of ITGB.

MANAGEMENT RESPONSE[27]

1. *"The PMO has project performance criteria which is outlined in the PMO Handbook. This is established when the project manager is developing the project charter with the project requestor. This criterion is used throughout the lifecycle of the project. The PMO will review the criteria with the ITGB. See Item 4 for the criteria.*
2. *"The new project management tool was fully implemented in the Spring of 2019. As part of the implementation, the ITGB report was re-created. All of the data needed for the report is populated by the PMs as a part of their status reporting.*
3. *"The project managers have been following the PMO Handbook for project close out activities which include lessons learned.*
4. *"The PMO Director collaborates with the ITGB to ensure the information collected meets their needs."*

[27] Management Response Attachments can be found in Appendix C.

IV. OBJECTIVES, SCOPE, AND METHODOLOGY

A. OBJECTIVE

The objective of the audit was to determine whether DoIT manages information technology investments in accordance with the GAO's Information Technology Investment Management framework. We focused on DoIT's processes for selecting, monitoring, and evaluating IT projects.

B. SCOPE

The audit scope included DoIT's processes for selecting, monitoring, and evaluating information technology projects that cost at least $250,000. We reviewed projects that were initiated or completed in 2016 and 2017.

C. METHODOLOGY

To assess DoIT's selection, control, and evaluation processes, we first compared its documented policies to the processes identified in ITIM. As needed, we also interviewed DoIT staff and asked follow-up questions to clarify our understanding of the policies and procedures.

To further evaluate DoIT's project selection process, we examined a targeted sample of eight projects that were launched in 2016 and 2017, and reviewed project documentation to determine whether DoIT adhered to its internal processes and best practices as defined in ITIM.[28]

To further evaluate DoIT's project monitoring processes, we selected a targeted sample of six projects that were closed in 2016 and 2017, and reviewed project documentation to determine whether DoIT adhered to its internal processes and best practices as defined in ITIM.[29] In addition, we assessed project performance by comparing planned to actual schedules, and budgeted to actual costs. OIG assessed the reliability of DoIT's cost numbers by comparing them with reports from the City's financial system, invoices, and other supporting documentation. DoIT was unable to identify all invoices for all projects. Therefore, we determined that actual cost data provided by DoIT was not reliable for further analysis.

To further evaluate DoIT's project evaluation processes, we reviewed documentation for the targeted sample of six completed projects to determine whether DoIT had assessed its own performance, vendor performance, or documented lessons learned. We also reviewed performance data recorded for all DoIT projects to determine if was sufficiently complete to allow DoIT to conduct portfolio-level analysis.

[28] We limited the number of projects to eight due to the volume of documentation associated with each project. We selected a mix of projects designed to ensure review of various functional areas within the City, both hardware and software projects, and projects of varying size.
[29] We selected the sample using the same criteria used to select our project selection sample.

D. STANDARDS

We conducted this audit in accordance with generally accepted Government Auditing Standards issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

E. AUTHORITY AND ROLE

The authority to perform this audit is established in the City of Chicago Municipal Code § 2-56-030 which states that OIG has the power and duty to review the programs of City government in order to identify any inefficiencies, waste, and potential for misconduct, and to promote economy, efficiency, effectiveness, and integrity in the administration of City programs and operations.

The role of OIG is to review City operations and make recommendations for improvement.

City management is responsible for establishing and maintaining processes to ensure that City programs operate economically, efficiently, effectively, and with integrity.

APPENDIX A: IT GOVERNANCE POLICY

The following is the full text of the current City of Chicago Information Technology Governance Policy, last updated June 14, 2019.

CITY OF CHICAGO
INFORMATION TECHNOLOGY GOVERNANCE POLICY

POLICY OVERVIEW

The City of Chicago Information Technology Governance Policy ("Policy") establishes a standard citywide process for requesting, prioritizing, and selecting proposed IT investments. *IT governance* provides a **framework for aligning the City's digital strategy with the City's business strategy.** By following a formal framework, the City will

- Align its investments to citywide strategy and goals,
- Minimize risk and duplication,
- Better track and understand impact of its technology investments, and
- Bring value to residents, businesses and visitors.

This Policy requires that all new technology projects and services as well as requests to fund additional investments and upgrades in existing products and services, regardless of the funding source must be submitted to DoIT via a central request process and be reviewed and approved by the Information Technology Governance Board (ITGB).

- Includes all requests for funding or other resources needed to complete new projects to create a new product or services, and modifications to existing products and services.
- Requests must be submitted through the **New ITGB Project** form and entered into **CBS** to be considered for new funding on the date of your department's budget submission is due each year.
- In some cases, exception requests will need to be made outside of the budget cycle. In such cases, the requests will be reviewed on an ad hoc basis with a consideration for available funding.
- Small projects that may be completed with no new funding and internal resources do not require review and approval by the ITGB.
- Projects to be included in grant applications or funded by grants must be submitted to the ITGB. Urban Area Security Initiative (UASI) Grant Program projects are exempt from this process and shall be subject to Office of Budget & Management (OBM) review and approval. OBM will provide the ITGB with a list of projects funded by UASI as available.

The **ITGB will also monitor project health and outcomes on a monthly basis**, providing oversight and may cancel projects that are not meeting established objectives. Templates will be provided.

While appropriate governance is needed, it should be **aligned to a citywide strategy that has been set collaboratively by the organizational leadership**. To that end, a new Technology Strategy Group (TSG) will be established. The TSG is chaired by the CIO and comprised of leadership from all City departments who will work to collaboratively set

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citywide digital strategy, and identify opportunities that enable technologies that deliver community benefit, optimize resources, improve service delivery, reduce risk, and build capacity (i.e., through automation or business process reengineering).

This Policy is established by the Office of the Mayor, the Office of Budget and Management (OBM), the Department of Innovation & Technology (DoIT), consulted by the Departments of Finance and Procurement Services and will be reviewed at least annually.

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POLICY SCOPE

This Policy applies to requests to **fund new IT projects and services as well as requests to fund additional investments and upgrades in existing products and services, regardless of funding source.** This policy also applies to requests to leverage internal resources to complete requested work. Requests for maintenance and/or support of existing systems are exempted from this Policy (these cost should be included in the project requests), but software and hardware maintenance is subject to the Technology Purchase Review and Approval (TPRA) policy.

This Policy does not supplant the City's TPRA policy. All purchases of hardware, peripheral devices, and software must adhere to that policy, including those contemplated for new IT projects covered by this policy. Further, requests made through TPRA must also already have adequate, available and approved funding source(s) in the fiscal year during which they are requested.

TPRA ensures that purchases are made according to approved requests for funding. This IT Governance Policy governs how departments will request funding or resources for new IT project requests.

This Policy only applies to the selection of IT investments. Note that IT investments must be further prioritized against other funding requests and operational needs. There is no set amount of available funding for IT projects.

GOVERNANCE BODIES

The *Technology Strategy Group (TSG)* will establish the City's digital roadmap, which will be used to inform the ITGB's decisions. The TSG is comprised of leadership from all City departments who will **work to collaboratively set citywide digital strategy**, and identify technologies that deliver community benefit, optimize resources, improve service delivery, reduce risk, and build capacity. This group will develop and maintain a digital roadmap that includes opportunities to test new technologies through pilots and optimization of business policies or processes to support the roadmap. This group meets quarterly in person or more frequently as needed, particularly during planning cycles.

The *IT Architecture Board (Architecture Board)* **sets enterprise technology standards** that align platforms, products, and services to the strategic digital roadmap. This group establishes IT standards and project/product management processes, and reviews details of each implementation to ensure compliance once funded. The Architecture Board is comprised of senior staff, architects, and project managers within DoIT. This group meets weekly in person to respond to needs throughout the year.

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The DoIT *Project Management Office (PMO)* is responsible for **reviewing all new project requests and associated business cases,** and integrates the decisions of the TSG and ITGB into new and ongoing programs and projects. The PMO may assist in the development of the request's business case. This group is an active member of all other groups to ensure coordination, and meets daily to keep requests moving through the pipeline and manage implementation.

The *IT Governance Board (ITGB)* **approves requests for funding, regardless of source, for new projects and services, additional investments and upgrades in existing products and services, as well as for subsequent phases to previously approved projects.** This body ensures that requested investments align to strategies identified by the TSG and reviews requests to scale successful pilots or modify purchasing-related policies. The **ITGB will also monitor project health and outcomes on a monthly basis,** providing oversight and having the ability to cancel projects that are not meeting established objective outlined in the Cancellation Process section below. The ITGB is comprised of staff from the Mayor's Office, the Office of Budget & Management, DoIT and consulted by the Departments of Finance and Procurement Services. The group will meet monthly in person and may meet virtually as needed.

REQUEST REQUIREMENTS

All requests to initiate or fund new IT projects or additional investments in existing products and services must be entered via the "New ITGB Projects" form at https://chicagogov.sharepoint.com/sites/pwa/Lists/NewProjectIntakeForm/Item/newifs.aspx and may be submitted at any time.

Requests must be submitted through the **New ITGB Project** form and entered into **CBS** to be considered for new funding on the date of your department's budget submission is due each year to be considered for the next funding cycle in subsequent years to be considered during the budgeting process for the following year, unless the request fits the criteria noted in the Exception Process section below.

Each department must vet and set their own priorities prior to submission of project requests. **All requests must be approved by the Department Head—please attach this approval to your request.**

Submissions are automatically routed for review. A DoIT Project Manager will be assigned to each request, and will follow-up with the department requester and identified business sponsor (if different). If the requesting department is unsure of costs, or need other assistance with the business case, the DoIT Project Manager office will assist.

Once the DoIT Project Manager has completed their initial review, the request will be submitted to the Architecture Board and the ITGB for review.

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PRIORITIZATION & SELECTION PROCESS

Each request is initially scored by the DoIT PMs according to set criteria, and the PMO may update or override the PM's initial scoring to ensure a balanced portfolio.

	CRITERIA	STATEMENT	POINTS POSSIBLE	SCORING RUBRIC
1	STRATEGIC ALIGNMENT	The project is directly aligned with the City's strategic goals (e.g., resiliency plan) or is mandated by regulation or ordinance.	20	0% - DO NOT AGREE 75% - SOMEWHAT AGREE 100% - AGREE
2	ORGANIZATIONAL SUPPORT & AVAILABLE RESOURCES	The business owner (department head or deputy) is the sponsor and committed to providing the right people resources needed to meet project goals., including access to front line staff.	15	0% - DO NOT AGREE 50% - SOMEWHAT AGREE 100% - AGREE
3	FUNDING/ESTIMATED COST & EFFORT	For requests made during budget cycle, the project has considered known costs within reason. For requests made outside the budget cycle, the score will be based on whether sufficient funds are available to complete project.	10	0% - DO NOT AGREE 50% - SOMEWHAT AGREE 100% - AGREE
4	TIME TO COMPLETE VS EFFORT	The project may be reasonably completed within the timeframe or completion date specified. In some instances, projects will be required to be completed by a certain date to an ordinance; in these cases, the project may be force ranked if needed	10	0% - DO NOT AGREE 50% - SOMEWHAT AGREE 100% - AGREE
5	EXPECTED RETURN	The project will result in a product or service that will generate revenue.	10	0% - DO NOT AGREE 50% - SOMEWHAT

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				AGREE 100% - AGREE
6	ORGANIZATIONAL BENEFIT	The project provides non-monetary value to residents, businesses, or the organization. The project solves a real problem for end users. The project contemplates engaging actual end users throughout the project to ensure success.	10	0% - DO NOT AGREE 50% - SOMEWHAT AGREE 100% - AGREE
7	ORGANIZATIONAL LOSS	Not selecting this project will impact the resident, businesses, or the organization negatively (i.e., reduce revenue, incur additional costs, increase time in line, etc.)	10	0% - DO NOT AGREE 50% - SOMEWHAT AGREE 100% - AGREE
8	ARCHITECTURE & STANDARDS ALIGNMENT	The project could leverage existing tools, systems, or technologies; reducing support costs and complexity of the City's enterprise architecture. An inventory is available to ITSCs.	10	0% - DO NOT AGREE 50% - SOMEWHAT AGREE 100% - AGREE
9	CREATIVITY	The project is innovative or will improve a process or service delivery.	5	0% - DO NOT AGREE 50% - SOMEWHAT AGREE 100% - AGREE

The requests with the highest scores are more likely to be funded or assigned to internal resources to complete. The number of funded or green-lighted projects will vary by year according to the availability of funding and resources.

Steps and associated estimated times to complete follow. Note that less complex and more complete requests will take less time to review and process, and more complex or less complete requests will require additional time.

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OWNER	STEP	TARGET TIME TO COMPLETE
DoIT – PMO Director	Reviews and assign requests	1-3 Business Days
DoIT – Project Manager	Contacts requester to obtain project details Provides a high-level estimate of the project cost for departments budgeting purposes. Scores the project based on the citywide IT strategy	1-5 Business Days
DoIT – Architecture Board	Reviews requests to ensure alignment with the City's policies and standards and determine if this project should use in-house resources or must leverage procurement processes	5-10 Business Days
DoIT – Project Manager	Contacts requester about next steps	1-3 business days
ITGB	Reviews requests for new funding and may override the PMO's initial scoring to ensure a balanced portfolio. Notifies project requesters based on results.	Quarterly, or more frequently during budget cycle, and as needed in the case of an exception request
DoIT – Project Manager	Contacts requester about next steps for funded projects	Within 1-3 days of ITGB review

EXCEPTION PROCESSES

On occasion, new projects are required to address an immediate emergency, an unknown and realized risk, or a new requirement resulting from legislation.

In these cases, the requester should still submit their request via the SharePoint site https://chicagogov.sharepoint.com/sites/doit/ITProjectManagement/SitePages/Home.aspx.

The request must **include a memo from the Department Head that explains the need for review outside of the annual process, the reason the exception is being requested, and when the new project must be completed.**

The DoIT PMO will follow the same, but an expedited process, and the request will be reviewed by the Architecture Board and ITGB outside of the normal annual cycle based on the situation presented by the requester. Approvals from the Architecture Board and ITGB may be done by email in these instances.

If salvage funds are identified that may be applied to requested, unfunded project requests, the department head must:

1. Notify their Budget Deputy prior to December 1, and request that the ITGB review their request to reallocate these funds.
2. If approved by the Budget Deputy, the ITGB will review this request at a year-end ITGB meeting.

NOTE: projects using annually appropriated funds will be subject to the year-end procedures established by the Department of Finance. Expenditure deadlines will not be extended.

PROJECT MONITORING

The DoIT PMO also monitors project health (relative to budget burn rate, schedule, quality) on a regular basis and is responsible for reporting this health to the Architecture Board, ITGB, and the TSG.

The ITGB will review project health and its progress against project goals and objectives for high priority and medium and large projects on a monthly basis, providing oversight. The ITGB may cancel projects that are not meeting established objectives.

CANCELLLATION PROCESS

If there is a need to cancel a project, an email notification needs to be sent to the CIO and Budget Director with the following information attached:

- Memo from the Department Head that provides a detailed justification for the cancellation request
- Business Case, Statement of Work, and/or the Requirements document(s) which were approved and signed by your departments' staff

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All cancellation requests will be reviewed by the ITGB. If the ITGB approves the cancellation, the Department Head will consult with the CPO or her designee about the appropriate communication method. The Department Head will draft a memo to the vendor(s) clearly communicating why the project is being cancelled and requesting a project close out meeting in which the vendor will deliver all project artifacts/code as outlined in the Statement of Work. Finally, the lessons learned form must be completed by the project team.

The ITGB may also suggest that the City consider cancelling a project if the project is not meeting the objectives outlined in the statement of work and/or business case. Should this occur, the Department Head(s) will be notified in writing with the rationale and request for additional information. The ITGB will set up one or more meetings with the project team to review the documentation and conduct appropriate due diligence before a decision is made.

APPENDIX B: PROJECT DESCRIPTIONS

This appendix summarizes the projects OIG reviewed as described by DoIT.

- Hyperion Budget System: This project was intended to replace the City's legacy budget system. The City terminated the project in 2019 when it was determined to not meet the needs of OBM.
- 311 Modernization: This project replaced a legacy Motorola system with Salesforce CRM system with the goal of improving departmental workflow tracking and request management and providing additional options for residents to enter and track requests.
- Chicago Early Learning Phase 1: "Working with DFSS and CPS, in June 2016 DoIT launched a universal early childhood portal designed to be a one-stop shop for all early learning information and enrollment for both school-based and out-of-school programs. Approximately 19,000 applications were collected, and more than 17,000 children were placed in pre-K programs."
- Citrix: This project updated the City's Citrix Enterprise Services environment. The City hosts over 20 applications on this environment including applications that support the functions of the Department of Buildings, Fleet and Facilities Management, and the Department of Finance.
- Array of Things (AoT): "AoT is an urban sensing project, a network of interactive, modular sensor boxes that will be installed around Chicago to collect real-time data on the city's environment, infrastructure, and activity for research and public use. AoT will essentially serve as a 'fitness tracker' for the city, measuring factors that impact livability in Chicago such as climate, air quality, and noise."
- House Share Registration System Phase 1: This project created a system to identify, track and approve (or deny) shared-housing rental units marketed on Airbnb.
- House Share Registration System Phase 2: This phase provided additional functionality to the House Share Registration System including accommodating additional companies that connect hosts and guests.
- Paperless: DoIT and Business Affairs and Consumer Protection launched an online business licensing system that automated the process of small business license issuance and renewal.
- WindyGrid 2.0: Launched in 2015, WindyGrid 2.0 is an enterprise system that supports Chicago's "situational awareness and incident monitoring and response." DoIT developed the system internally using open source software. The project included a public facing component, called OpenGrid, that made some of WindyGrid's data and functionality publicly available.
- Voice over Internet Protocol (Phase 1): Launched in 2017, Phase 1 replaced 3,000 legacy phones. This is a multi-phase project with a goal of replacing 24,000+ phones.

- eProcurement: Launched in 2015, this system created an online platform to increase efficiency and transparency in City procurements. This created a single platform for all departments to management procurement opportunities, track vendor and delegate agency payments, and enable the City to decommission the standalone grants system.
- Utility Tax: "This project integrated water and sewer taxes into the existing Banner Utility Billing system."

APPENDIX C: MANAGEMENT RESPONSE ATTACHMENTS

This appendix contains the attachments to the Management Response Form submitted by DoIT.

Item 1: Project Intake Form

Is this a new or modified process or service?	
Background: Additional information regarding this request	
Proposed Project Timeframe:	
Projected Start Date (Est):	
Projected End Date (Est.):	
Timeframe Justification:	
High Level Cost Estimate:	
High Level Cost Breakdown:	
Do you have funding?	
Funding Strip:	
If so, funding Type:	
If grant, attach the grant award document	Click here to attach a file
Can the grant end date go to the next grant period?:	
Probability of funding from your department:	
Risk: Any potential problems that could impact this project.	
Assumptions: Anything considered to be true that could impact this project.	
Dependency: Anything this project relies upon for completion.	
Constraint: Any condition that will be a barrier for this project.	
Audience/End-Users:	Internal Users
Procurement Method:	None Required
Is this mandatory? For example, is this ordinance driven and etc...	
Why is this mandatory?	
Return On Investment:	
Business Case Completed?: (Completed by PMO)	No
Status (Complete by PMO):	New Request

Item 2: Cancellation Process

If there is a need to cancel a project, an email notification needs to be sent to the CIO and Budget Director with the following information attached:

- Memo from the Department Head that provides a detailed justification for the cancellation request
- Business Case, Statement of Work, and/or the Requirements document(s) which were approved and signed by your departments' staff

All cancellation requests will be reviewed by the ITGB. If the ITGB approves the cancellation, the Department Head will consult with the CPO or her designee about the appropriate communication method. The Department Head will draft a memo to the vendor(s) clearly communicating why the project is being cancelled and requesting a project close out meeting in which the vendor will deliver all project artifacts/code as outlined in the Statement of Work. Finally, the lessons learned form must be completed by the project team.

The ITGB may also suggest that the City consider cancelling a project if the project is not meeting the objectives outlined in the statement of work and/or business case. Should this occur, the Department Head(s) will be notified in writing with the rationale and request for additional information. The ITGB will set up one or more meetings with the project team to review the documentation and conduct appropriate due diligence before a decision is made.

Item 3: ITGB Report

Below are the reporting fields based on the information the ITGB wants to review.

- Project Number
- Project Name
- URL
- Department
- Executive Sponsor
- Description of Problem or Need Project
- Percent Completed
- Open/Closed
- Project Manager
- Project Manager Notes
- Funding Source
- Amount Encumbered
- Expended YTD
- Funds Still Available
- Project Finish Date

Item 4: Project Performance Criteria

The following is the project performance criteria used by the PMO.

Execution Phase Project Performance Metrics

- Percentage on time
- Percentage on budget
- Percentage on scope
- Percentage on quality
- Percentage of deliverables on schedule
- Budget versus forecast
- Number of requirements changes/Total number of requirements
- Outstanding issues/Total issues
- Risks mitigated/Total risks
- Percentage of user base trained
- Client satisfaction
- Number of help desk calls related to project
- Number of vendor performance issues
- Time to fulfill project change requests
- Percentage of project resources devoted to reusable component development
- Time to fix detected problems
- Percentage compliance with architecture standards

MISSION

The City of Chicago Office of Inspector General (OIG) is an independent, nonpartisan oversight agency whose mission is to promote economy, efficiency, effectiveness, and integrity in the administration of programs and operations of City government. OIG achieves this mission through,

- administrative and criminal investigations by its Investigations Section;
- performance audits of City programs and operations by its Audit and Program Review Section;
- inspections, evaluations and reviews of City police and police accountability programs, operations, and policies by its Public Safety Section; and
- compliance audit and monitoring of City hiring and employment activities by its Hiring Oversight Unit.

From these activities, OIG issues reports of findings and disciplinary and other recommendations,

- to assure that City officials, employees, and vendors are held accountable for violations of laws and policies;
- to improve the efficiency and cost-effectiveness of government operations; and
- to prevent, detect, identify, expose, and eliminate waste, inefficiency, misconduct, fraud, corruption, and abuse of public authority and resources.

AUTHORITY

OIG's authority to produce reports of its findings and recommendations is established in the City of Chicago Municipal Code §§ 2-56-030(d), -035(c), -110, -230, and 240.

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IGCHICAGO.ORG/CONTACT-US/HELP-IMPROVE-CITY-GOVERNMENT

TO REPORT FRAUD, WASTE, AND ABUSE IN CITY PROGRAMS:
CALL OIG'S TOLL-FREE TIP LINE: (866) 448-4754 / TTY: (773) 478-2066

OR VISIT OUR WEBSITE
IGCHICAGO.ORG/CONTACT-US/REPORT-FRAUD-WASTE-ABUSE/