21.

tpl: toronto public library

STAFF REPORT
INFORMATION ONLY

2020-2024 Digital Strategy – Annual Report 2024

Date: June 24, 2024

To: Toronto Public Library Board

From: City Librarian

SUMMARY

The purpose of this report is to provide the results of the 2023 Digital Strategy Action Plan and present the 2024 Digital Strategy Action Plan.

Modernization driven by data and technology is a key enabler in Toronto Public Library's (TPL's) 2020-2024 Strategic Plan. TPL's Digital Strategy will ensure staff and customers are provided with the right combination of technologies and supports to meet their evolving needs. The Digital Strategy defines a shared vision, course of action, and required investments to enable the priorities set out in TPL's 2020-2024 Strategic Plan.

The 2023 action plan has continued delivery in alignment with the Digital Strategy across a range of initiatives including enterprise technology within the data centre and improvements to technology supporting branch customer services. Progress was made with application rationalization and migration from legacy hardware to hyper converged infrastructure (HCI). Protective controls have been increased across the library along with enhanced proactive security monitoring and response capabilities. Speed of delivery of these

advancements was in part due to increased capacity and service recovery following the cybersecurity incident in 2023.

Following the cyber security incident, an improved secure network environment was restored within the data centre. Further adoption of cloud infrastructure is supporting the library's ability to be resilient in the event of loss of connectivity and provides improved security controls. Accelerated adoption and operationalization of cloud security services has increased the security posture of the Library. Additionally, increased collaboration with the City of Toronto Office of the Chief Information Security Officer (CISO) has added expanded capability and oversight of the Library's cybersecurity monitoring services.

Despite the organizational and operational impacts of the cybersecurity incident in late 2023, progress continued throughout 2023 on delivery of the Digital Strategy. Notably, progress accelerated within priority areas including *Connected Workplace* and *Adaptive Technology Foundation*. This has resulted in faster infrastructure refresh, application rationalization and introduction of new productivity tools.

FINANCIAL IMPACT

The Digital Strategy, including the 2024 Action Plan, is funded by TPL's approved operating and capital budgets. Within the capital budget, there are three main multi-year projects that contribute to supporting the strategic plan execution, technology replacement strategy, and digital strategy: Technology Asset Management Program; Service and Digital Modernization; and Digital Experience. Funding for the Digital Strategy is incorporated into each year's budget submission.

The Director, Finance & Treasurer has reviewed this financial impact statement and agrees with it.

DECISION HISTORY

At its February 24, 2020 meeting, the Library Board approved the 2020-2024 Strategic Plan Overview as recommended by the Strategic Planning Steering Committee.

At its January 25, 2021 meeting, the Library Board approved the [Digital Strategy 2020-2024.](#)

At its May 24, 2022 meeting, the Library Board approved the [Digital Strategy 2020-2024 Update.](#)

At its May 23, 2023 meeting, the Library Board approved the [2020-2024 Digital Strategy – Update.](#)
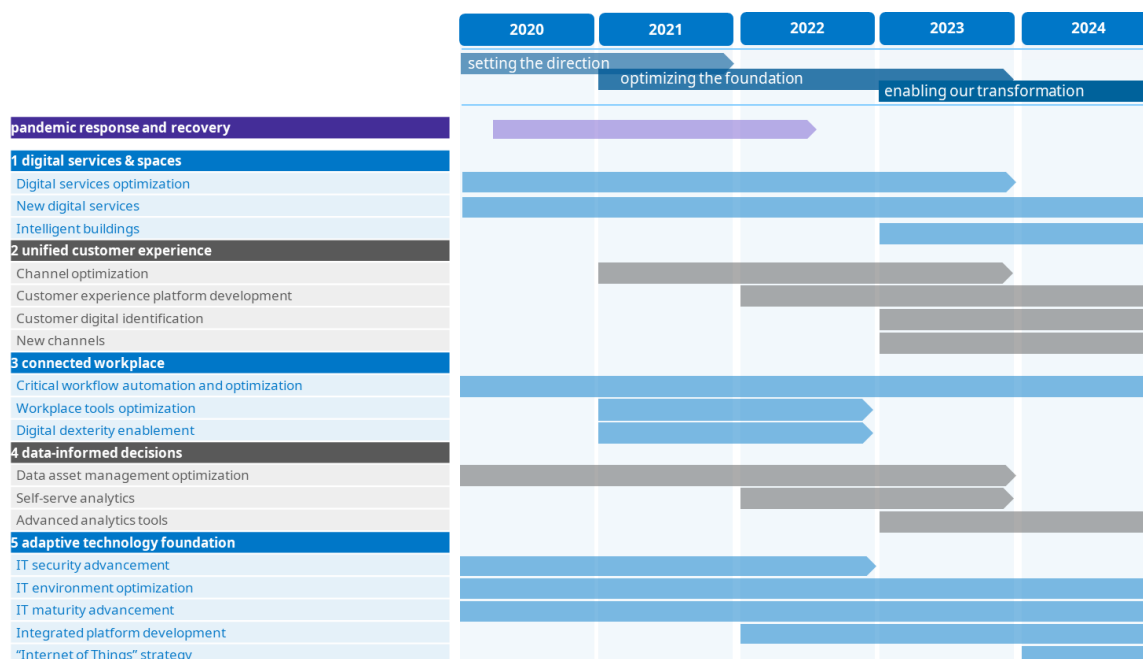
COMMENTS

Modernization driven by data and technology is a key enabler in TPL's 2020-2024 Strategic Plan. TPL's Digital Strategy will ensure staff and customers are provided with the right combination of technologies and supports to meet their evolving needs. The Digital Strategy defines a shared vision, course of action, and required investments to enable the priorities set out in TPL's 2020-2024 Strategic Plan.

To enable an innovative, efficient library system to better inform, engage and connect Toronto and its residents, and to build success, resilience and well-being for the city and its communities, the 2020-2024 Digital Strategy is focused on achieving the following:

- *Our ambition:* To deliver exceptional digital value and experiences;
- *Our commitment:* To provide staff and customers with the right combination of technologies and supports; and
- *Our approach:* To create a modern, connected and sustainable data and technology environment that is transformation ready.

The roadmap for the Digital Strategy identifies key activities planned between 2020-2024, with associated goals and key activities (Attachment 1).

Digital Strategy Roadmap Timeline

Phases across years 2020–2024:
- setting the direction (2020–2021)
- optimizing the foundation (2021–2023)
- enabling our transformation (2023–2024)

Year	2020	2021	2022	2023	2024

Initiatives:

pandemic response and recovery (2020–2022)

1 digital services & spaces
- Digital services optimization (2020–2023)
- New digital services (2020–2024)
- Intelligent buildings (2023–2024)

2 unified customer experience
- Channel optimization (2021–2022)
- Customer experience platform development (2022–2024)
- Customer digital identification (2023–2024)
- New channels (2023–2024)

3 connected workplace
- Critical workflow automation and optimization (2020–2024)
- Workplace tools optimization (2021–2023)
- Digital dexterity enablement (2021–2023)

4 data-informed decisions
- Data asset management optimization (2020–2023)
- Self-serve analytics (2022–2023)
- Advanced analytics tools (2023–2024)

5 adaptive technology foundation
- IT security advancement (2020–2023)
- IT environment optimization (2020–2024)
- IT maturity advancement (2020–2024)
- Integrated platform development (2022–2024)
- "Internet of Things" strategy (2024)

By executing on the Digital Strategy, TPL is confident that it can provide exceptional value and experiences to staff and customers by ensuring they have the right combination of technologies and supports to meet evolving needs. Most importantly, it will enable the priorities identified in TPL's 2020-2024 Strategic Plan and build a secure, reliable, scalable data and technology foundation that can evolve with TPL's future growth and transformation aspirations.

2023 Action Plan Review

The 2023 action plan has continued delivery in alignment with the Digital Strategy across a range of initiatives including enterprise technology within the data centre and improvements to technology supporting branch customer services. Progress was made with application rationalization and migration from legacy hardware to hyper converged infrastructure (HCI). Protective controls have been increased across the Library along with enhanced proactive security monitoring and response capabilities. Speed of delivery of these advancements was in part due to increased capacity and service recovery following the cybersecurity incident in 2023.

Following the cybersecurity incident, an improved secure network environment was restored within the data centre. Further adoption of cloud infrastructure is supporting the Library's ability to be resilient in the event of loss of connectivity and provides improved security controls. Accelerated adoption and operationalization of cloud security services has increased the security posture of the library. Additionally, increased collaboration with the City of Toronto Office of the CISO has added expanded capability and oversight of the Library's cybersecurity monitoring services.

Despite the organizational and operational impacts of the cybersecurity incident in late 2023, progress continued throughout 2023 on delivery of the Digital Strategy. Notably, progress accelerated within priority areas including *Connected Workplace* and *Adaptive Technology Foundation*. This has resulted in faster infrastructure refresh, application rationalization and introduction of new productivity tools.

Digital Experience Platform (DXP) program
During 2023, TPL made significant progress on advancement of the Digital Experience Platform transformation initiative. An assessment of desired functionalities for online services was completed. This output was aligned with customer experience user stories. Together, these assets were reflected in the development of the business case for *Digital Experience Platform* program and ultimately led to an official procurement process.

IT security advancement
Leading up to the cybersecurity attack in October 2023, advancements were underway to improve TPL's IT security posture. Within the Protective Controls workstream's scope, more protections were adopted for user accounts and authentication. Heightened protections included the activation of multi-factor authentication, complex passwords and strengthened password policies. As a result of the cybersecurity attack, elevated protective controls and authentication polices were applied across internal assets within the data centre to enable additional layers of protection against cyber threats.

Early in 2023, TPL's initial Cyber Security Response Playbook was drafted. The playbook was subsequently tested through a cybersecurity tabletop exercise. When the cyberattack initially unfolded in October 2023, the

playbook was a key resource in guiding the ITS team's response.

During recovery from the cyberattack, many aspects of TPL's IT security infrastructure and risk mitigation posture have been improved. Historically TPL has leveraged a third party to provide limited 24/7 monitoring of core network security services. Among the IT security improvements implemented is a formalized partnership with the City's CISO. CISO is providing 24/7 Security Operations Centre monitoring services, just one example of the augmentation to internal IT security services and capabilities. Additional services from Office of the CISO also include penetration testing on internet facing web applications and vulnerability testing. Results from these assessments have ensured residual risks are identified and adequately remediated prior to reactivation of TPL's web platforms.

IT environment optimization
The 2023 action plan continued the focus on modernization and rationalization within the data centre. With the completion of implementation of HCI, multiple enterprise applications were migrated from legacy infrastructure. This has resulted in a reduction of operational risk with aging infrastructure and supports the direction of consolidation for operational efficiency.

Connectivity stabilization
Branch network connectivity stabilization and increased bandwidth has continued throughout 2023. During 2023, fibre upgrades were completed at 75% of branch locations to ensure adequate bandwidth and capability to support telephony migrations. The remaining 25% of locations are expected to be addressed in 2024. Fibre upgrades enable enhanced capacity and functionality. Following completion of fibre upgrades at all locations, minimum bandwidth to any TPL location is anticipated at 1Gbps with larger locations supported with much higher bandwidth. The improved fibre service also enables new functionality to support the transition from analog phone systems to cloud hosted VoIP across all TPL locations.

In part due to branch network capacity upgrades, bandwidth limiting on individual public Wi-Fi sessions was increased from 6Mbps to 15Mbps. Further increases to individual session bandwidth is

anticipated in the future as additional bandwidth becomes available through the core data centre.

Data asset management optimization
Following a migration project completed in 2023, TPL's open data sets are published on the [City of Toronto's Open Data Portal](). This move was executed to demonstrate a broader commitment to collaboration with the City of Toronto and support the activation of greater access to data sets online.

2023 Results Summary
The 2023 action plan identified the following key activities; the status of each project is identified in the far-right column.

Focus Area	Workstream	Initiatives	Status
Digital services and spaces	New digital services	Programming modernization	Elements incorporated into the Digital Experience Request for Proposal. Procurement process and award of contract underway.
Unified customer experience	Digital experience platform	Customer experience platform development*	User stories and business case developed. Request for Proposal posted and procurement process underway.
Connected workplace	Workplace tools optimization	Staff technology modernization*	New staff technology standards evaluated and selected. Fleet wide staff technology refresh project initiated.
	Digital dexterity enablement	Digital enablement program design	Digital literacy training was piloted with staff to help early adoption of new collaboration tools.

Data-informed decisions	Data asset management optimization	Data management platform optimization	Development environment complete for the purposes of improved analysis of customer activity. Production environment is outstanding.
		Data quality optimization	Re-scoped project to develop standards and processes to ensure data is fit for analytic use.
		Tracking branch hours (formerly open hours optimization)	Deferred to 2024 due to cyber incident
Adaptive technology foundation	IT environment optimization	Wireless expansion	Bandwidth increased. Full system-wide refresh and expansion pending.
		AV optimization	Initial proof of concept complete with hybrid meeting technology Full system wide refresh and expansion pending
	Application optimization	Enterprise applications migration	Many enterprise applications migrated from legacy infrastructure to the hyper converged infrastructure.

*Strategic plan execution roadmap initiative

2024 Digital Strategy Action Plans

In addition to continuing with the in-progress initiatives outlined in the 2023 Action Plan, the following are 2024 action plan initiatives:

Priority Area	Initiatives	Description
1 digital services & spaces		
Digital services optimization	Digital Experience Platform	Establish a modern, flexible, and all-encompassing online Digital Experience Platform.
New digital services	Enable programming modernization	Upgrade event management enterprise application.
2 unified customer experience		
Unified customer experience	Digital Experience Platform	Deliver a dedicated TPL mobile application with a consistent customer experience.
3 connected workplace		
Workplace tools optimization	Enable staff productivity, communications, and collaboration	Achieve enhanced collaboration to support hybrid work through virtual meetings, chat, file sharing, etc.
4 data-informed decisions		
Data asset management optimization	Tracking branch hours	Implement the process for effectively tracking and reporting openings and closures of TPL branches to centralize the information and ensure standardized reporting.
	Data classification	Develop repeatable process for classifying data into standardized groups.
	Data	Standardize a tool to collect data. Review and revise, if necessary, key performance measures definitions

5 adaptive technology foundation		
IT security advancement	IT security, risk and governance program implementation	Mature IT Security posture through deeper adoption of enhanced security tools. Increase IT Security collaboration with the City of Toronto Office of the CISO
IT environment optimization	Computing devices plan implementation*	Deliver TPL staff modern workspace technology through simplification and standards adoption.
	Print devices assessment and plan*	Complete review of current environment and deliver improvement plan for staff and public print/copy services.
	Applications rationalization and roadmap	Continue to execute migration for enterprise applications following multi-year roadmap.
	Enterprise architecture program design	Operationalize enterprise architecture standards framework through application of accountabilities and processes.
	IT infrastructure review and redesign	Execute required infrastructure enhancements to maintain continuity of service and mitigate operational risk to service delivery.
	Telecommunications review and redesign	Complete unified telecommunications as a service strategy.
IT maturity advancement	Advancement plan implementation	Continue to improve IT maturity following best practices for IT Service Management.

* Strategic plan execution roadmap initiative

During 2024, work will restart on the staff collaboration and pay-for-print projects that were on pause during the cyber security incident. These projects are important initiatives supporting to goal to modernize TPL's services.

The work identified in the 2024 action plan is necessary to accelerate TPL's digital capabilities – to meet the growing demands of technology as a service to Library customers and to improve staff productivity and effectiveness. Ultimately, the Digital Strategy will ensure that TPL can not only provide exceptional digital experiences and value but also thrive in a digital age.

CONCLUSION

The Digital Strategy is a key enabler of TPL's 2020 - 2024 Strategic Plan and will ensure the needs of Library staff and customers are satisfied now and into the future. Response to the cybersecurity attack of 2023 has accelerated advancements related to the Library's IT security posture. Dedicating capacity to incident response and service recovery delayed or slowed other enterprise initiatives important to advancing the Digital Strategy.

Nevertheless, throughout 2023, ITS has continued the focus on optimizing the foundation for technology transformation including progress on the modernization of the data centre with strategic use of cloud-enabled services. In 2024, the enterprise-wide refresh of workspace technology, broad adoption of collaboration tools, and the adoption of a new digital experience platform will support modernization goals, improving operational efficiency and service delivery. Despite the acknowledged disruptions to service delivery that continued into the first quarter of 2024, the roadmap will continue to guide digital transformation into 2024.

CONTACT

Steve Till-Rogers, Director, Digital Strategy & CIO, Tel: 437-228-1211
Email: stillrogers@tpl.ca

SIGNATURE

_____

Vickery Bowles
City Librarian

ATTACHMENTS

Attachment 1:   2020-2024 Digital Strategy: five priority areas, with associated goals and key activities

2020-2024 Digital Strategy: five priority areas, with associated goals and key activities

1.0 Digital Services and Spaces

Goal: Toronto Public Library (TPL) has a vibrant digital presence that provides dynamic online services and physical spaces that are digitally advanced.

Key activities:
- Enable the delivery of more digital services to meet customer demands.
- Deliver new innovative technologies to maximize the use of online and digital channels.
- Explore opportunities to provide more immersive experiences using interactive and augmented reality technologies.
- Leverage planned renovations/rebuilds to blend the physical and digital spaces by deploying smart building, wayfinding and service solutions.

2.0 Unified Customer Experience

Goal: Consistent, personalized experiences across and between service touchpoints, driving customer satisfaction and anticipating changing expectations.

Key activities:
- Apply human-centered and inclusive design to amplify the voice of the customer and support the full range of human diversity.
- Develop an easy-to-use digital customer experience platform that enables convenient and responsive access to TPL's services and collections.
- Deliver services that offer customers choice and flexibility across all TPL channels.
- Explore opportunities to leverage data and technology to create unique and targeted experiences based on customer choices and behaviours.

3.0 Connected Workplace

Goal: A digitally-enabled workplace that improves ways of working, raises employee engagement and agility, and provides a consistent and positive employee experience.

Key activities:
- Deliver an integrated suite of technologies to enable effective employee collaboration, productivity and communications.
- Provide technology and supports to equip a mobile workforce whether in branches, in the community or at home.
- Automate and streamline core workflows to increase the efficiency, effectiveness and speed of operations.
- Cultivate a "Digital by Default" culture and enable digital dexterity to support employees in embracing data and technology to achieve better outcomes.

4.0 Data-informed Decisions

Goal: Data is accessible, information is meaningful and actionable, and analytics is a core capability of the organization.

Key activities:
- Structure and manage data as a strategic asset to ensure it is protected and fit for analytics use.
- Automate reporting to support performance measurement.
- Provide self-serve technology and supports for staff to run queries and get whatever data they need to make timely decisions.
- Explore opportunities to enhance TPL's Open Data platform and analysis tools to enable broader use, and to support informational, educational, professional and/or civic engagement interests.

5.0 Adaptive Technology Foundation

Goal: Provide a secure, integrated, scalable technology environment that can enable TPL's current and future priorities.

Key Activities:
- Raise the maturity of IT functions so that the organization can effectively support TPL's digital aspirations.
- Improve access to technology for staff and customers.
- Rationalize and optimize legacy technologies to reduce cost, improve performance, facilitate integration and increase user adoption and satisfaction.
- Adopt a modern security approach to improve cybersecurity and TPL's overall security position.
- Enable better communications between systems to amplify customer and employee voices and support co-operative partnerships.