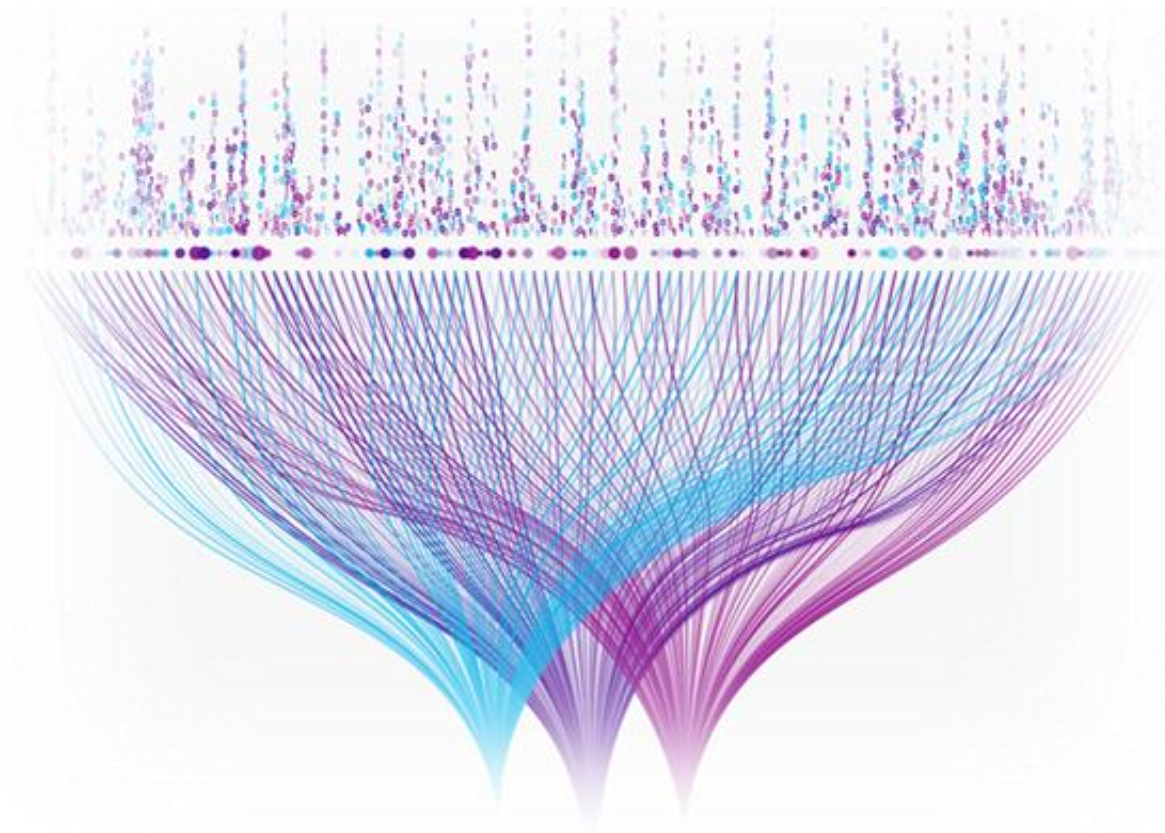




Employment and Social Development Canada Data Strategy 2023 to 2026

Employment and Social Development Canada Data Strategy, 2023-2026

Large print, braille, MP3 (audio), e-text and DAISY formats are available on demand by [ordering online](#) or calling 1 800 O-Canada (1-800-622-6232). If you use a teletypewriter (TTY), call 1-800-926-9105.

© His Majesty the King in Right of Canada, 2025

For information regarding reproduction rights: droitdauteur.copyright@HRSDC-RHDCC.gc.ca.

PDF

Cat. No. Em4-52/2025E-PDF

ISBN 978-0-660-78717-6

On this page

Message from the Chief Data Officer.....	4
Executive Summary	6
Introduction	7
Objectives.....	7
Vision.....	8
Framework.....	8
Service areas.....	11
Data Innovation.....	13
Data Governance and Trust.....	14
Data Culture and Literacy.....	16
Foundational Data Infrastructure	18
Opportunities and Priorities.....	19
Opportunities.....	20
Priorities for 2023 to 2026	22
Implementation.....	23
Conclusion	24
Appendix 1: Framework definitions	25
Data Innovation.....	25
Data Governance and Trust.....	25
Data Culture and Literacy.....	26
Foundational Data Infrastructure	27

Message from the Chief Data Officer

The Government of Canada faces increasing expectations in a complex and rapidly changing environment. Population aging continues and according to Statistics Canada's demographic projections, seniors could account for over one-fifth of the population by 2025¹ and immigration is projected to remain the main driver of population growth over the coming decades.

Client needs are evolving as crises such as pandemics, war, cyber-threats, and climate change test the vulnerability of our systems. Meanwhile, the digital world is evolving rapidly with technologies such as Artificial Intelligence (AI) presenting a world of opportunity, but also a need to carefully assess and manage risks related to privacy, security, and our ability to identify and serve people most at risk of being underserved.

In our complex and rapidly changing environment, decision makers need to understand and be able to leverage the right data at the right time to ensure that programs, policies, and services are meeting the evolving needs of Canadians. Employment and Social Development Canada (ESDC) established one of the Government of Canada's first Chief Data Offices and developed the first iteration of the ESDC's Data Strategy in 2016 to respond to the need to unlock the power of data for data-driven decision-making. With the renewal of ESDC's Data Strategy in 2021 and the application of lessons learned, ESDC has demonstrated the value and potential of data across departmental initiatives. We have adjusted along the way to help ensure that the Department is getting the maximum value out of data for Canadians, while minimizing costs and risks.

ESDC was also the first department to create a Chief Data Officer Branch (CDOB) in 2023. This organizational change better positions us to meet the evolving needs of the Department and Canadians. It underlines the importance of managing and using data strategically as a shared enterprise asset. Working together, people across ESDC can **use data to better understand client needs, improve client service**, and assess and report back to Canadians on the impact of programs and services.

As ESDC's Chief Data Officer, I am proud to recognize the progress we have made. I also acknowledge that there is work to be done. **Enabling effective, responsible, and innovative use of data is positioning the Department to better navigate challenges and meet its mandate by being proactive in addressing the needs of our clients.** By working together to establish and evolve the enterprise data foundations and data culture, we can scale data-driven solutions, leverage advanced methods and technologies responsibly, and provide better services and outcomes for all Canadians.

¹ Statistics Canada, Canada's population estimates: Age and sex, July 1, 2021



A handwritten signature in black ink, appearing to read 'Ima Okonny'. The signature is stylized with a large 'O' and a long horizontal stroke.

Ima Okonny, Assistant Deputy Minister and Chief Data Officer, Chief Data Officer Branch

Executive summary

Employment and Social Development Canada (ESDC) works to improve the standard of living and quality of life for all Canadians. The Department collects, manages, and uses vast amounts of data every day—in everything from service delivery to policy and program development. Equipping the right people with the right insights to make the right decisions at the right time across the Department is key to better understanding our clients and how we make a difference in Canadians' lives from coast to coast to coast. At the same time, it ensures that we get the most value from data while mitigating risks to Canadians.

The objective of the 2023 to 2026 ESDC Data Strategy is to bring ESDC further along the path towards achieving better services and outcomes for all Canadians. The Strategy aims to empower departmental employees to collectively treat data as enterprise assets, grounded in a culture of data stewardship and collaboration, that spans across policy analysis and research through to evaluation and reporting back to Canadians. It outlines enterprise direction for equipping employees with the knowledge, skills and tools needed to deliver on the organizational mandate. It also supports us in strengthening our ability to monitor our programs, enhance operational efficiencies and leverage and adapt to changing technologies, such as Artificial Intelligence (AI).

Progress made in implementing the 2023 to 2026 ESDC Data Strategy will also support ESDC's first AI Strategy, as well as the advancement of the Government of Canada's [2023 to 2026 Data Strategy for the Federal Public Service](#) and establishment of Canada's first [AI Strategy](#). On all of these fronts, our efforts will be rooted in a human-centric approach based on human rights, transparency, openness, and respect for the protection of personal information.

At the core of creating a seamless client service experience and generating value for Canadians is the ability to manage, find, understand, trust, share and use data as corporate and strategic assets. The 2023 to 2026 ESDC Data Strategy is centered on 4 key Service Areas – Data Innovation, Data Governance and Trust, Data Culture and Literacy, and Foundational Data Infrastructure. Focusing on these Service Areas will enable the Department to identify and manage opportunities and risks, while helping us to implement improvements that allow for the scaling of advanced data and analytical methods.

The world is changing rapidly, the status quo is no longer adequate, and ESDC must be agile to meet these challenges head on. The 2023 to 2026 ESDC Data Strategy lays down the foundation for the future of data-driven work at ESDC. The Strategy is designed to evolve as new opportunities and priorities arise. As technologies and advanced methods evolve, the Strategy positions us to continue to execute on our commitment to the responsible and innovative use of data to realize wide-ranging benefits across the Department. It also sets the direction on how we continue to leverage data efficiently to drive key initiatives **that improve programs and service delivery**, to support modernization and transformation initiatives, and to **measure our impact and results on the lives of Canadians**.

Introduction

The mission of Employment and Social Development Canada (ESDC), including the Labour Program and Service Canada, is to build a stronger, more inclusive Canada, to support Canadians in living productive and rewarding lives, and to improve Canadians' quality of life. At the heart of achieving this mission are the data we manage on behalf of Canadians. Putting policies, programs and services in place that meet the needs of Canadians requires harnessing this valuable resource by carefully collecting, managing, and using data to make informed and effective decisions. Artificial Intelligence (AI) can significantly enhance our capabilities by analyzing vast amounts of data, offering insights that drive more informed decisions and improve service delivery in both efficiency and effectiveness. We need to do this in the most efficient and cost-effective ways, while limiting risks to Canadians. Data help us understand and communicate how ESDC's diverse services and programs touch the lives of our clients. **It enables an evidence-informed approach to understanding our clients and tailoring services to meet their needs.** The 2023 to 2026 ESDC Data Strategy (hereafter "the Strategy") guides the innovative, ethical, and responsible use of data and analytical tools to empower *all* employees to treat data as shared, protected enterprise assets.

Objectives

The Strategy is designed to enable the following results:

- **integrated data** that enable horizontal lines of sight across our policies, programs, services and channels, resulting in **Canadians getting the benefits they are entitled to** and ensuring no one is left behind
- the **right controls, secure environments and proper data management and governance practices** to **effectively manage privacy and access, reduce data risk, and ultimately increase citizen trust**
- **accelerated use of automation to improve administrative efficiencies and meet or exceed service standards. This is accomplished** by considering data up front, using modern data tools, and managing work so that employees can focus on more complex and high priority cases and better serve vulnerable clients
- **a culture of transparency that is fostered** through open data that drives integrated policies and services, while embedding the sharing of insights, concerns, and best practices in the Department's culture
- **contextualized data that are fit-for-purpose, timely, discoverable, and properly documented. This enables its timely use to enhance operational efficiency, policy, analysis, research, and evaluation**
- trusted information that is readily accessible and helps senior leaders make timely, data-driven decisions to **promptly address emerging priorities and implement service improvements**
- **empowered employees with the skills and tools** to manage and use data and analytics innovatively, ethically, and responsibly to carry out their work

The Strategy Framework is the blueprint for achieving the following objectives:

- drive **Data Innovation** for improved processes and decision-making. This includes cultivating and leveraging data science and analytics capacity to generate forward thinking advice and harness the potential of new tools and methods

- foster **Data Governance and Trust** to ensure that ESDC has sustainable and ethical policies and practices guiding data management, sharing and use
- mature **Data Culture and Literacy** to empower our employees and executives to better understand and use data
- build the **Foundational Data Infrastructure** that provides architectural design, tools and infrastructure that enable implementation across the Department

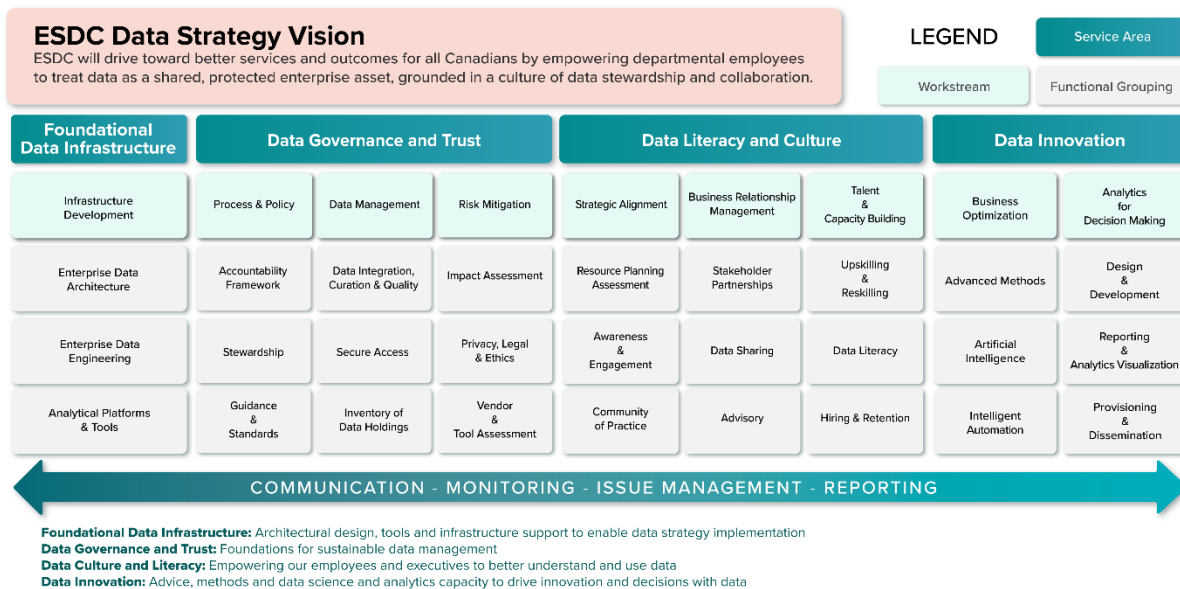
Striving to become a more fully data-enabled organization will ensure that programs and services are improved in ways that meet the evolving needs and rising expectations of the clients we serve.

Vision

ESDC's Data Strategy's **vision** is to deliver better outcomes and services for all Canadians by empowering departmental employees to treat data as enterprise assets— shared, protected resources grounded in a culture of data stewardship and collaboration. By doing so, the Department can gain deeper insights to generate forward-thinking advice for data-driven decision-making.

Framework

Figure 1: ESDC Data strategy vision



Text description of Figure 1

ESDC Data Strategy vision

ESDC will drive toward better services and outcomes for all Canadians by empowering departmental employees to treat data as a shared, protected enterprise asset, grounded in a culture of data stewardship and collaboration.

Service area: Foundational Data Infrastructure

Architectural design, tools and infrastructure support to enable data strategy implementation. This service area includes the following workstreams and functional groupings:

Workstream: Infrastructure development

Functional groupings

- Enterprise data architecture
- Enterprise data engineering
- Analytical platforms and tools

Service area: Data Governance and Trust

Foundations for sustainable data management. This service area includes the following workstreams and functional groupings:

Workstream: Process and policy

Functional groupings

- Accountability framework
- Stewardship
- Guidance and standards

Workstream: Data management

Functional groupings

- Data integration, curation and quality
- Secure access
- Inventory of data holdings

Workstream: Risk mitigation

Functional groupings

- Impact assessment
- Privacy, legal and ethics
- Vendor and tool assessment

Service area: Data Culture and Literacy

Empowering our employees and executives to better understand and use data. This service area includes the following workstreams and functional groupings:

Workstream: Strategic alignment

Functional groupings

- Resource planning assessment
- Awareness and engagement
- Community of practice

Workstream: Business relationship management

Functional groupings

- Stakeholder partnerships
- Data sharing
- Advisory

Workstream: Talent and capacity building

Functional groupings

- Upskilling and reskilling
- Data literacy
- Hiring and retention

Service area: Data Innovation

Advice, methods and data science and analytics capacity to drive innovation and decisions with data. This service area includes the following workstreams and functional groupings:

Workstream: Business optimization

Functional groupings

- Advanced methods
- Artificial intelligence
- Intelligent automation

Workstream: Analytics for decision making

Functional groupings

- Design and development
- Reporting and analytics visualization
- Provisioning and dissemination

Communication, monitoring, issue management and reporting are ongoing for all service areas, workstreams and functional groupings.

The Strategy framework is the blueprint for achieving departmental data maturity. It helps ESDC employees see how their work is enabled by data. The various streams of work and groupings of work functions that make up the 4 Service Areas are required by ESDC to collect, manage, share, and use data effectively. See [Appendix 1](#) for full definitions of each category of the Framework.

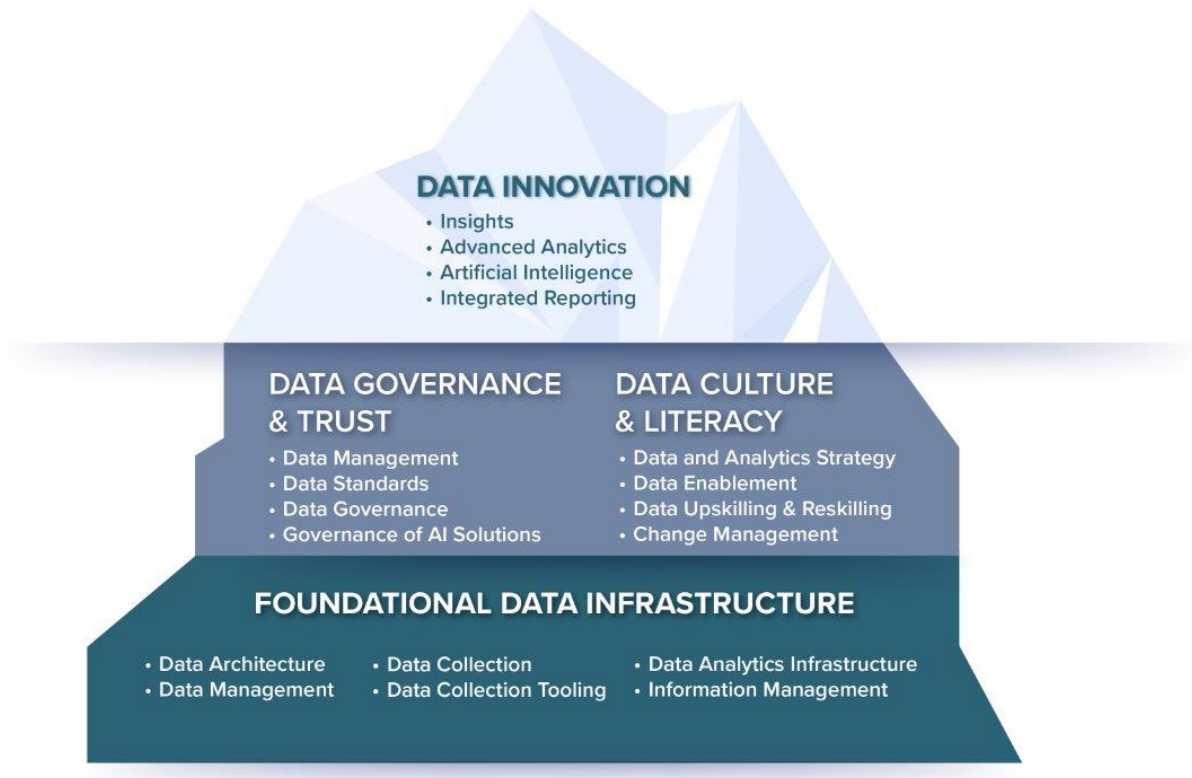
Service delivery, Benefit Delivery Modernization, operations, policy analysis, research, evaluation, and enabling services – all of this work is driven by data. The Service Areas, Workstreams, and Functional Groupings highlight functions in and around data use at ESDC. This includes everything from developing and leveraging analytical platforms and tools to reporting and visualization capacity, from accountability frameworks to a data literacy program that helps employees understand and exercise their critical data roles, and more. Regardless of where an employee is situated within the Department, or what their function may be, **it is a collective responsibility** to govern and steward data holdings as a shared, enterprise asset.

Often, data-related roles and activities cut across functions. The Framework acts as a guide to ensure all aspects and responsibilities associated with the use of data are accounted for by the Department, by design. The Workstreams and Functional Areas arranged under the 4 Service Areas detail the data considerations that need to be accounted for in delivering products and services, from funding and policy proposals through to evaluation and reporting.

Service areas

The Service areas that make up ESDC's Data Strategy are building data and analytical capabilities from the most foundational levels through to the end products generated through Data Innovation. This relationship is often illustrated as an iceberg. The products of Data Innovation are shown above the waterline. Here we can find the products and services that are most visible to decision makers, but that cannot surface without the strong foundations below. Below the waterline are the foundations of the data ecosystem. The architecture and tools for capturing, storing, and managing data are at the base. Governance and Culture are the layer above, providing the direction, guidance and supports that enable effective data management and use.

Figure 2: Service Areas



Text description of Figure 2

Service area: Data Innovation

- Insights
- Advanced Analytics
- Artificial Intelligence
- Integrated Reporting

Service area: Data Governance and Trust

- Data Management
- Data Standards
- Data Governance
- Governance of AI Solutions

Service area: Data Culture and Literacy

- Data and Analytics Strategy

- Data Enablement
- Data Upskilling & Reskilling
- Change Management

Service area: Foundational Data Infrastructure

- Data Architecture
- Data Management
- Data Collection
- Data Collection Tooling
- Data Analytics Infrastructure
- Information Management

Data Innovation

The **Data Innovation** Service Area reflects our departmental commitment to continuous improvement in terms of realizing the ‘art of the possible’ with data. Through Data Innovation, we are growing the Department’s data science and analytics capabilities to unlock efficiencies and extract better insights from data. This helps us make our processes more efficient and better tailored to client needs, identify emerging issues and trends, and measure and report on performance and service levels. It means pushing our limits and having the expertise to understand and mitigate the risks of doing so.

To drive this innovation, departmental data science experts centralized within the Chief Data Officer Branch are made increasingly available to business lines and senior management to meet their business optimization and data analytics needs.

Key activities

Work under the Data Innovation Service Area is comprised of various projects through which CDOB partners with business leads to explore opportunities and address business needs. These projects help the Department achieve better value and improve service to Canadians.

Increasing demand for services means we need to increase efficiency. Real life examples include finding \$192M in unclaimed benefits by linking information across the Canada Pension Plan (CPP) and Canada Student Loans. Through this initiative, **ESDC addressed the challenge of children of disabled or deceased CPP contributors being unaware of or facing barriers in accessing the Children’s Benefit**. A decade of CPP administrative data were linked to Canada Student Loans administrative data to find and list former beneficiaries who were eligible for continued CPP benefits but were not receiving them. **On average 9,700 cases of eligible non-recipients were identified.**

Using natural language processing, the Record of Employment (ROE) AI model helped reduce the workload for the Employment Insurance program by automatically categorizing a portion of simple comments on ROEs. **The model helped automatically process over half a million comments, speeding up benefit delivery for Canadians.** Similarly, over 350,000 T4 work items for CPP and Old Age Security (OAS) recipients were closed between 2017 and 2021, **enabling client service officers to shift their focus to more complex cases.**

Optical character recognition and intelligent document processing are also being evaluated and deployed to help ESDC programs enhance form processing in the Department. This is another example of work that is helping reduce **wait times and allowing agents to focus on more complex work.**

These are just a few examples of how work in the data innovation space is propelling ESDC forward. Work under this Service Area is helping us use data in innovative ways that improve our understanding of our clients' needs and how we serve them. At the same time, it helps us better understand and manage the potential and risks of new technologies and methods.

Data Governance and Trust

An important part of being able to do more with data across the Department is ensuring a collective understanding of the various roles, responsibilities, and accountabilities that come with the management of any asset. **Governance and Trust** guides the process of getting the right data into the right hands to make the right decision. It also supports maintaining the confidentiality, security, and privacy of personal information. Data governance is about developing the rules, principles, and guidelines around data **before** collection, creation, sharing, and consumption. Data Innovation would not be possible without the governance foundations that enable data that are fit-for-purpose to be shared and used in new and innovative ways.

Data Governance and Trust are key concepts for the foundation of sustainable data management. Canadians entrust the Government of Canada and ESDC with their data. They expect that it will be used responsibly and kept secure. Data Governance is about creating a system of decision rights and accountabilities for data that are executed according to agreed-upon models. The trust of the Canadian public is not a given, and it is up to ESDC and other federal government organizations to foster public trust in how the Government of Canada uses their data. Data Governance describes who can take what actions with what data, under what circumstances, and using what methods. It is also about being open with the public about these processes to improve public trust in Government.

For a large organization like ESDC, a one-size-fits-all approach to data governance might not be realistic. The data governance program follows an adaptive approach that recognizes that data governance practices exist across the organization. It allows the flexibility to apply different governance approaches to specific business scenarios while providing enterprise guidance and standards. For example, employing a top-down approach to data governance when implementing new activities, such as the ESDC Data Accountability Framework, or employing a bottom-up approach through the outputs of working-level groups such as the Enterprise Data Stewardship Network.

Key activities

The **ESDC Data Accountability Framework (DAF)** is an evergreen document developed to ensure that ESDC leaders are aware of their accountability with respect to the responsible stewardship and use of

data. It is a first step towards ensuring that data responsibilities are communicated and well understood across the Department. The Data Accountability Framework lists specific accountabilities and decision rights for managing data assets across key organizational leadership roles. Defining clear accountabilities within ESDC's governance structure supports timely decision making and effective data management, as well as assessment and management of key risks and issues. Developed in line with various departmental and Government of Canada policies, legislation, and guidance, it organizes data management accountabilities into 14 distinct categories, including Artificial Intelligence, Data/Information Architecture, and Privacy. The Accountability Framework was endorsed by the ESDC Enterprise Management Committee on October 19, 2023.

The ESDC **Data Governance Operating Model** has been developed to support the management of accountabilities, to drive decision-making, and to provide pathways for escalation and communication regarding the strategic management of ESDC's data assets. Adopted in 2022, it outlines the executive, strategic, tactical, and operational layers required to set direction based on needs, priorities, risk mitigation, and oversight for data management efforts across the enterprise.

The **Data Inventory** maximizes the business value of an organization's data by facilitating the efficient tracking, searching, and reporting of data holdings; by improving knowledge and access to data for Policy Analysis, Research and Evaluation (PARE) activities, performance evaluation, reporting, and operational decision making; and by encouraging the secure sharing of data. Every data steward across the Department is responsible for content within the Data Inventory. The Inventory then feeds into the high-level, outward facing Enterprise Data Catalogue platform. ESDC's **Enterprise Data Inventory 2.0** will enable PARE analysts, service officers, and managers to efficiently access information on ESDC's data holdings all in one place. This includes providing a Data Steward contact name for the person in the Department responsible for each dataset. Analysts can search data by descriptive metadata, such as keyword, to find datasets that could be of use in their assigned projects.

The **Enterprise Data Portal** is a self-serve application available to ESDC researchers, Service Canada and Reporting teams, program evaluators, and stakeholders that supports sharing and reuse of data. It also supports the creation and management of data requests. The Portal stores and documents data access request details, such as project descriptions, effective dates, user lists, requested datasets and variables. The Portal also allows for storage of supporting documentation and offers downloadable data dictionaries. Having an Enterprise Data Portal helps the Department get the most value out of data products.

ESDC is also modernizing its current data sharing practices by developing an enterprise-wide data and information sharing framework. The framework is being developed through collaboration with ESDC branches, all levels of government and Indigenous partners. Current data and information sharing practices between ESDC and its partners could be more efficient and transparent. Better practices would increase ESDC's ability to deliver client-centred services as departmental and interdepartmental data are incrementally centralized, catalogued and integrated while continuing to respect 'need to know' principles, confidentiality protocols, and policy and legislative requirements. This will help to minimize costs and risks while increasing efficiencies. An enterprise information sharing framework will standardize and enhance data sharing across the Government of Canada, with the goal of improving data quality and consistency, strengthening data stewardship, increasing data-driven insights, and embedding collaboration with other government departments as the standard, while adhering to legal requirements.

Finally, the Governance and Trust Service Area is designed to build trust between ESDC and the Canadians by reporting back on the impact of programs and services as **Open Data**. To support the [Directive on Open Government](#), ESDC has defined governance and standards for publishing ESDC program data to the public via the [Government of Canada Open Data Portal](#). This ensures the public has access to ESDC program data to support research, engagement, and a deeper understanding of public programs.

Data Culture and Literacy

Gaining insights and finding answers to complex questions is only part of the journey. The importance of strong **Data Culture and Literacy** cannot be overstated. It is key to unlocking the value and actualizing the potential of ESDC's vast data holdings when developing the products and services that ESDC delivers. Every ESDC employee has a responsibility to develop data knowledge and skills that will support them in their day-to-day work and on their career path.

Culture and Literacy are about **empowering employees and executives** to better understand and use data to ensure programs and services meet the evolving needs of our clients and Canadians. It is about providing the **tools, training, and resources** staff need to understand the vital role data play in their work. It helps employees across the Department understand the impact of data on policy and programming, as well as how to fully leverage data as enterprise assets. Data Culture and Literacy also includes **investing in ESDC employees'** professional development, as well as building engagement and enhancing collaboration across teams, branches, and regions to create a data-driven organization.

It starts with **Talent and Capacity Building**, whether **hiring** talent or **upskilling and reskilling** employees. It is vital that executives and managers equip their organizations and teams with the talent, training, and tools necessary to manage data effectively and to leverage data to the fullest potential. Building talent from within will also maintain a favourable organizational culture for data practitioners and support retention and career progression.

ESDC has been creating, leading, and supporting data literacy, engagement, and awareness through initiatives such as ESDC's Data Week and communities of practice. These initiatives help build a stronger data culture.

Business Relationship Management also ensures that we get the right data, tools, and support into the hands of ESDC employees. It helps build a greater understanding how data link to business needs and supports the development of strong partnerships across ESDC.

Key activities

In 2022, ESDC launched the **Data Literacy Program**. Complete with Data Competencies, Data Personas, and Learning Paths, it supports transformation and modernization efforts by providing the data knowledge and competencies needed to succeed in this digital and data-driven era. Being data literate helps employees deliver programs and services that respond to the evolving needs of Canadians.

The purpose of the Program is not to make everybody a data expert. The Program helps everyone at ESDC, from junior employees to leaders, adapt to the rapidly changing data and digital work environment and realize their full potential. It also supports management and Human Resource-driven activities that build data culture and capacity at ESDC, including workforce planning, staffing, classification, performance management, learning and talent management. The Program has benefits within and outside ESDC,

supporting collaboration, information sharing, and partnership building across the Department and the Public Service.

The ESDC Data Literacy Program is continually refreshing self-paced and instructor-led **data literacy training**. This training is developed in collaboration with subject matter experts and partners. For example, *Data: The Basics* is a series of 5 self-paced online modules that provide foundational data knowledge to ESDC employees through the Department's learning management platform, Saba. ESDC has also contributed to the development of Government of Canada (GC) data literacy training and events through partnerships with Statistics Canada and the Canada School of Public Service. Examples include the GC Data Conference, [Foundations of Data Analysis: The Analytical Process](#), [Data Literacy for the Public Sector \(apolitical.co\)](#), and [Disaggregated Data for the Policy Community](#). Training and resources tailored to support employees with understanding and applying new directives and tools have also been developed and cover topics such as data ethics and AI.

The ESDC Data Community of Practice (CoP) is an informal gathering that aims to increase consistency and excellence in data practices across the Department. Regular meetings help to break down silos and increase data literacy through the sharing of tangible work practices. The CoP is held every month and welcomes all ESDC employees to participate as presenters or as attendees.

Data@ESDC is a SharePoint site that communicates the work of the Chief Data Officer Branch (CDOB) and progress on maturing data culture and foundations for the enterprise. The site socializes the Strategy, while acting as a service portal for clients looking to access CDOB-led products and support services. The site is evergreen and is continuing to evolve.

The first ever **Data Week** launched in October 2022. Data Week is an annual event that features virtual and in-person engagements and activities on all things related to data. From demystifying data and improving data literacy, to fostering secure, ethical, and meaningful use of data - there is something for all ESDC employees. Data Week helps build partnerships across ESDC and strengthens the data community. The event also supports the Data Literacy Program by drawing attention to data literacy resources and initiatives.

In line with the [2023 to 2026 Federal Data Strategy](#), broadening our relationships with other departments to enhance collaboration and share data and products will become increasingly important to driving evidence-informed decision-making. Stronger relationships also help ESDC and its partners generate greater public value from investments in data. Collaboration through **joint data strategies** will ensure ESDC is able to support work across the Department by taking a horizontal and proactive approach to collecting and managing the data that we need today, as well as data that the Department and our partners will need down the road. ESDC has co-developed the framework for the ESDC-Statistics Canada Joint Data Strategy. The ESDC-Statistics Canada Strategy is an important partnership grounded in aligning on interdepartmental data needs and gaps, driving data literacy and culture change, increasing interoperability, and advancing better data access between organizations. Looking ahead, the Department will use this experience **to inform the development and maintenance of joint data strategies** to enable improved sharing and collaboration on a broader scale, including opportunities to work with federal, provincial and territorial partners to enhance collaboration and partnership.

Efforts to improve **access to Statistics Canada microdata** are underway to enable more efficient and effective use of data for ESDC's policy, analysis, research, and evaluation (PARE) activities. The collaboration with Statistics Canada has successfully provided ESDC Researchers with a continuum of

access solutions, including remote access to microdata stored in the Cloud, and access to rapid descriptive analysis through Real Time Remote Access. ESDC also negotiated new access options for data-driven insights, descriptive analysis, and data linkage projects. The continued development and improvements in accessing Statistics Canada data assets will result in deeper insights to support evidence-based policy insights and development, as well as program delivery.

Foundational Data Infrastructure

All the work across ESDC to turn data into knowledge and deeper insights that inform decision-making is made possible by the underlying **Foundational Data Infrastructure**. The infrastructure allows the secure collection, storage, transformation, integration, use, and sharing of data assets. **Foundational Data Infrastructure** helps meet the organization's need for data access by using up-to-date platforms, software, and common tools to collect, organize, store, manage, and use data. Resources are required to establish scalable data foundations within ESDC so that these foundations can be leveraged to support data innovation, help generate a complete picture of the client and their needs, and to provide seamless client service.

Key activities

The Enterprise **Data Foundations Platform (EDFP)** is a collection of data products and services that will help ESDC employees store, discover and access data easily and securely. It supports evidence-based decisions by leveraging state-of-the art technology. The platform provides employees with access to secured data for business intelligence and analytics in service-delivery, operations and PARE areas, and is made up of 4 components: the **Enterprise Data Lake**, the **Enterprise Data Catalogue**, the **Enterprise Data Warehouse**, and **AI-Enabled Labs**.

The **Enterprise Data Lake** will provide a centralized data repository to store and manage data from multiple sources. Data can be stored in its current state without needing to be transformed and can also be enhanced. The versatility of the data lake will provide ESDC teams the capability to run many types of analytics including dashboards, visualizations and near real-time analytics. These capabilities will help guide evidence-based decisions in support of various programs.

The **Enterprise Data Catalogue** is a centralized, governed, high-level metadata repository designed to manage and provide detailed information about ESDC's data assets. It provides a search engine to discover ESDC data holdings, data products and business terms. This tool builds an inventory of ESDC data assets with standard metadata for easy discovery across the organization incrementally. With its launch in 2024, the ESDC Data Catalogue OPSSharePoint allows departmental employees to find descriptive information on data assets that help them fulfill analytical, forecasting and reporting requirements.

The **Enterprise Data Warehouse** is a curated data repository with quantitative and qualitative data tables readily available to answer analytics and reporting needs. The Warehouse enables staff to extract the most value out of a data product, while minimizing investment and risk.

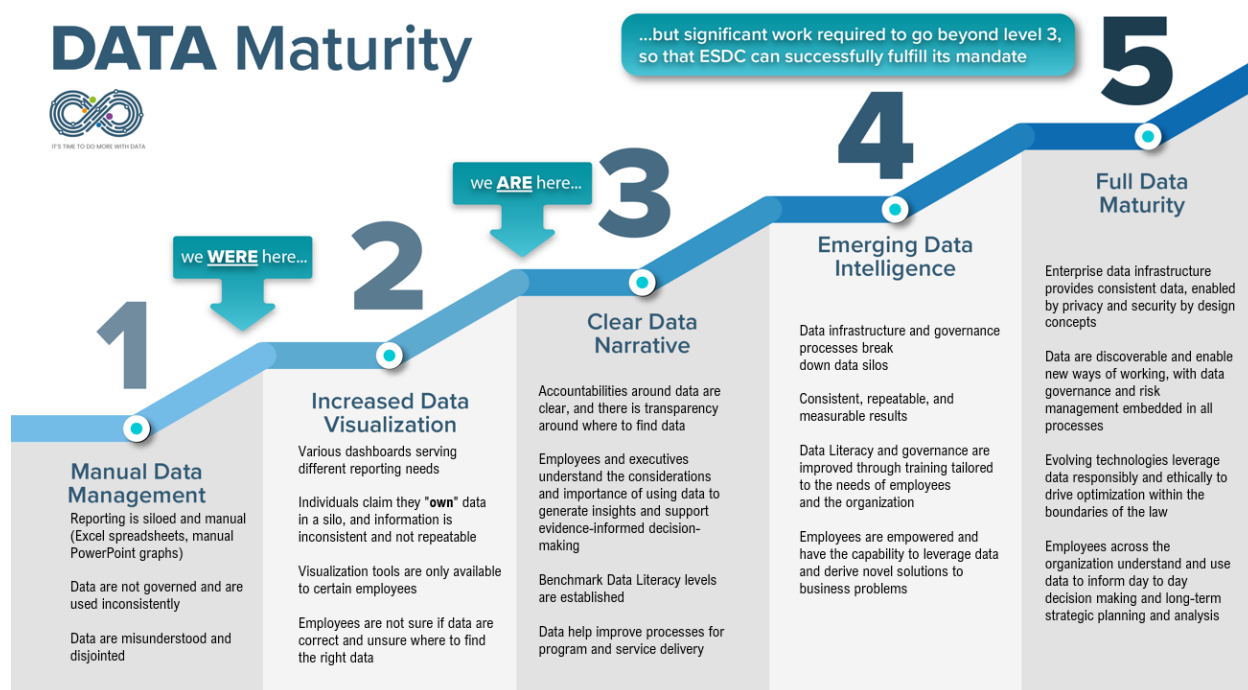
AI-Enabled Labs provide Data Scientists and Analysts across the organization with modern tools required to research, experiment, and publish data-driven models more efficiently. These labs will be a driver for responsible AI adoption and use across the Department. They include fairness dashboards and monitoring tools, which will be required for AI solutions supporting service delivery and automation.

Overall, the EDPF will improve user experience, providing ESDC employees with the tools to store, discover, access, understand and use data assets, ultimately positioning the Department to provide better services to Canadians. Senior leadership will be empowered to make more timely and better-informed decisions based on insights and advice drawn from trusted data assets. The EDPF also reduces risk exposure by having consistent privacy and quality controls in place for secure, ethical, and transparent use of data.

Opportunities and priorities

ESDC's Data Strategy's **vision** is to deliver better outcomes and services for all Canadians by empowering departmental employees to treat data as enterprise assets— shared, protected resources grounded in a culture of data stewardship and collaboration. **This will happen in phases as the Department increases its data maturity step-by-step, building on skills and capabilities developed as the Strategy is implemented.** In advancing data maturity, the Strategy addresses different challenges faced by the Department, such as data silos and outdated tools and systems, by advancing work under 4 Service Areas. The implementation of ESDC's Data Strategy moves us further and further ahead in having access to the right data at the right time and enabling timely decision-making and responsiveness to emerging challenges. It facilitates cross-departmental collaboration, drives innovation, and advances efficient problem-solving by enabling people across the Department to leverage diverse data sets and put ESDC's data analytics capabilities into action.

Figure 3: Data Maturity



Text description of Figure 3

Title: Data Maturity

Level 1: Manual Data Management

- Reporting is siloed and manual (Excel spreadsheets, manual PowerPoint graph)
- Data are not governed and are used inconsistently
- Data are misunderstood and disjointed

Level 2: Increased Data Visualization (we were here)

- Various dashboards serving different reporting needs
- Individuals claim they “own” data in a silo, and information is inconsistent and not repeatable
- Visualization tools are only available to certain employees
- Employees are not sure if data are correct and unsure where to find the right data

Level 3: Clear Data Narrative (we are here, but significant work required to go beyond level 3)

- Accountabilities around data are clear, and there is transparency around where to find data
- Employees and executives understand the considerations and importance of using data to generate insights and support evidence-informed decision-making
- Benchmark Data Literacy levels are established
- Data help improve processes for program and service delivery

Level 4: Emerging Data Intelligence

- Data infrastructure and governance processes break down data silos
- Consistent, repeatable, and measurable results
- Data Literacy and governance are improved through training tailored to the needs of employees and the organization
- Employees are empowered and have the capability to leverage data and derive novel solutions to business problems

Level 5: Full Data Maturity

- Enterprise data infrastructure provides consistent data, enabled by privacy and security by design concepts
- Data are discoverable and enables new ways of working, with data governance and risk management embedded in all processes
- Evolving technologies leverage data responsibly and ethically to drive optimization within the boundaries of the law
- Employees across the organization understand and use data to inform day to day decision-making and long-term strategic planning and analysis

Opportunities

Limited insight into the reach and impact of ESDC programs and services results in being unable to target programs and services to client needs and increases the risk of gaps in service, especially for clients who

are hard to reach and most at risk of being underserved. Through the implementation of ESDC's Data Strategy, **the Department is increasing its ability to provide the right information, at the right time to decision-makers and Canadians, on issues that matter to them.** Harnessing the power of data and what data can do to transform how employees work and the lives of all Canadians, ESDC will continue to push improvements to policy analysis and research, evaluation, service delivery, Benefit Delivery Modernization, and even internal operations.

ESDC will continue to build on its data foundations to enable timely responses to emerging priorities. Emphasis will be placed on focusing data investments in areas that enable employees to leverage the right data at the right time, and to provide decision-makers with timely and relevant information that helps the Department make decisions that best meet the needs of Canadians. This includes identifying underserved and vulnerable populations by integrating data across the policy to service continuum. It also extends to using horizontal insights to modernize our benefit delivery systems and improve client service. Making better use of data ensures programs are tailored to meet client needs and that we are reaching all Canadians.

Looking ahead, ESDC will drive towards the efficient management and coordination of data-driven decision-making in employment **Equity, Diversity, and Inclusion (EDI)**. A well-aligned policy framework facilitates effective decision-making. It ensures that the data-driven decisions made by different branches of the Department are not only in line with their respective goals but also contribute to the overall advancement of hard-to-reach populations and underrepresented groups in the context of EDI.

We are seeing rapid evolution of **Artificial Intelligence (AI)** use across government, private organizations and worldwide.² The Organisation for Economic Co-operation and Development (OECD) defines an AI system as a "machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment."³ The quality of those inputs (data) is essential to applying AI in a deliberate, and human-centric way. ESDC is positioned to be a leader in understanding AI and demonstrating how it can be leveraged responsibly. As there is no good AI without good data, this Strategy complements the work to develop and implement ESDC's AI Strategy. The quality of data directly impacts the accuracy and reliability of AI predictions and insights. Along with understanding the art of the possible, there is a need to generate awareness and to manage potential risks that come with using AI technologies. There is an opportunity to develop data literacy products to address information gaps, such as training and resources on AI Governance and Ethics.

We will also focus on creating processes for inclusive and meaningful engagement on AI policies and projects, including through the development of the AI Strategy for the Federal Public Service.⁴ ESDC will champion an AI Strategy for the Federal Public Service that has commitment to a human-centric AI approach that emphasizes human rights, transparency, openness, and the protection of personal information at its heart. ESDC will be a key partner in building the Government of Canada's AI Strategy,

² [Attitudes to AI in the Canadian Public Service \(globalgovernmentforum.com\)](https://globalgovernmentforum.com/attitudes-to-ai-in-the-canadian-public-service)

³ [Updates to the OECD's definition of an AI system explained - OECD.AI](https://oecd.ai/updates-to-the-oecd-definition-of-an-ai-system-explained)

⁴ [Responsible use of artificial intelligence \(AI\) - Canada.ca](https://canada.ca/en/ai-strategy)

ensuring that it reflects how the sound management, governance, and use of the right data for the right purpose is key to responsible and ethical use of AI that meets Canadians' needs and expectations.

Through forums such as the **ESDC Enterprise Data Stewardship Network (EDSN)**, the Department has gathered information on the data gaps and needs that inform emerging priorities and will focus efforts going forward. Establishing the EDSN was an important milestone, and the network will continue to be essential to ensure that data stewards from across the Department are engaged in the identification of data needs and development of recommendations on priorities and actions for meeting business requirements.

The launch of the **Departmental Policy on Information and Data Management (DPIDM)** and **Data Governance Office** provide the foundations for work required to develop more detailed guidance, standards and supports for ESDC employees to develop their strategic plans and directives on the use of data for their respective branches.

Maturing and scaling the **Enterprise Data Portal** will empower data users within ESDC to access, customize, and manage data from external resources efficiently and effectively. This will enable employees to develop deeper insights that inform data-driven decision-making. Current work focuses on replicating the **Census Data Portal** and developing a scaled-up **Statistics Canada Data Portal**. Upon completion, the Enterprise Data Portal will help ESDC data users search all data files and tables from Statistics Canada, quickly find and retrieve relevant datasets and tables, initiate new custom data product requests, and track the status and progress of their data requests. In addition, automation features will support improved communication with ESDC data users and improve reporting.

Priorities for 2023 to 2026

Deliver on core infrastructure projects such as the Enterprise Data Foundations Platform (EDFP). This includes further developing the Enterprise Data Catalogue and the Enterprise Data Warehouse to ensure employees have access to the right data when they need it. Developing the Enterprise Data Lake and AI-Enabled Labs will also ensure employees have modern secure tools with which to work with data.

Enhance service delivery through data integration. This includes work on benefits uptake measurement that supports the Reaching All Canadians initiative and generating horizontal insights through the Parliamentary Data Strategy, joint data strategies, and supporting analyses.

Invest in employees and enabling support such as the Data Literacy Program, data governance processes and tools, enterprise hiring for data skills, and Data and AI ethics guidance and tools. As key milestones in Data Strategy implementation are reached, it will be important to manage organizational change properly. This includes providing comprehensive, and user-friendly onboarding material to support stakeholders transitioning to the use of the EDP. It also includes empowering employees to leverage AI responsibly to generate insights, drive operational efficiency, and improve program impact and services through a human-centric approach that upholds our commitment to human rights, inclusivity, fairness and transparency in serving Canadians. Providing employees with the right knowledge, skills and tools are key to ensuring that all ESDC employees are equipped to leverage AI in their daily work.

Establish guidelines for the responsible use of AI for the Department and understand the benefits and risks of this new and rapidly evolving technology. ESDC is committed to maintaining an ethical stance on data that includes ensuring that AI and analytics are used responsibly in operations and that a human-

centric approach is prioritized. The use of AI is transforming operations and service delivery by enabling citizens and employees to get information tailored to their specific needs. ESDC will continue the in-house development of Optical Character Recognition (OCR) tools for enterprise-wide application. The Department also launched its ESDC Virtual Assistant (EVA), a Generative AI tool for employees to help streamline routine tasks so they can focus on more complex and creative work. At the same time, departmental transformation initiatives are advancing the value-driven, responsible exploration of AI applications for the delivery of statutory benefit programs such as Old Age Security, Employment Insurance, and the Canada Pension Plan.

Establish Joint Data Strategies with other departments to further shape our enterprise data ecosystem. Managing and using data as shared assets across various departments will empower data users who face significant barriers and hurdles in accessing and using properly contextualized and curated data.

Continue to **maximize the value** from our data while continuing to **minimize costs and risks** through enterprise data portfolio consolidation and oversight. This includes work to streamline data and information sharing and to effectively manage all ESDC's financial investments and improve financial analysis. This will help to manage escalating costs while continuing to meet the diverse data needs across the Department.

Continue to **align ESDC data policies** with the overarching goals of the Department to ensure that data initiatives and decisions are consistent with the organization's strategic direction. This will support a unified approach to ensuring adherence to regulatory requirements, ethical standards, and legal frameworks, especially in relation to Equity, Diversity, and Inclusion (**EDI**) data. The alignment work includes measures to identify and address data gaps, identify biases within data processes and decisions, and promote fairness and equity in the treatment of data related to **hard-to-reach populations**.

Implementation

Maturing to become a more data-enabled and data-driven organization will ensure that programs and services are improved to meet the evolving needs and rising expectations of the clients we serve. ESDC's approach to planning, measuring results and reporting on progress of Strategy implementation involves taking the Department on the journey. It will capture everything from developing the foundational data infrastructure for department-wide data management and use to using data visualization to communicate insights and support decision-making.

Uptake of the **Data Literacy Program** will be crucial to ensuring that ESDC staff understand their role in implementing the Data Strategy and how their work should incorporate the responsible use of data. Data literacy is the foundation of a strong data-driven culture. Employees who are data-literate can derive meaning from data and have the knowledge and competencies required to work with data, including the ability to read, analyze, interpret data, and use them to make decisions. A data literate workforce will strengthen ESDC's data culture, contribute to building trust and public confidence, and enable the delivery of better programs, policies, and services to meet the needs of different population groups and those in greatest need.

The Program's Data Personas and Learning Paths will guide employees' professional development and talent management. They will also support recruitment, reskilling and upskilling to respond to the evolving digital and data environment in which ESDC operates. Data Competencies will help management teams

in all branches and regions equip their workforce for the innovative, secure, and ethical use of data and analytics.

The Enterprise Hiring for Data Skills initiative will analyze data recruitment needs across ESDC and design/implement an Enterprise Collective Staffing Plan for Data Talent. Having a robust talent pipeline is critical for success as it ensures the availability and retention of skilled professionals to drive data-driven initiatives. The initiative will facilitate the identification and bridging of skills and literacy gaps within the organization. It will support recruitment and development strategies to enhance diversity, equity, and inclusion and enable the alignment of talent with organizational needs and priorities.

Key Performance Indicators (KPIs) for the Strategy are being developed by the Chief Data Officer Branch. This will enable the tracking of progress towards data maturity as the Department continues its data journey. The Branch will also work with business lines to develop business narratives that communicate results for initiatives where Strategy implementation has enabled business partners across the department to deliver on their priorities and mandate commitments. CDOB will also provide support for the development, management and maintenance of data products and services that have been identified as priorities for the Department.

ESDC's Chief Data Officer Branch will provide regular executive updates and communicate progress in Strategy implementation to employees across ESDC.

Conclusion

The 2023 to 2026 ESDC Data Strategy is designed to evolve as new opportunities and priorities arise for the Government of Canada and ESDC. Activities under each Service Area of the Strategy will continue to develop, and ESDC's Chief Data Officer Branch will document progress towards optimal data maturity. The Branch will continue to engage with internal partners and business lines to identify their different data requirements, acting as the data-enabler for the Department across service delivery and policy analysis, research, and evaluation (PARE). The criticality of data for reporting cannot be overemphasized. ESDC must identify and measure gaps in programs and services, including benefit uptake, to ensure that the department is delivering effective programs, services, and benefits to those who are entitled to them. This is especially important for meeting the needs of clients who are hard to reach and most at risk of being underserved. Over the Strategy's life cycle, every ESDC employee is responsible for aligning their work to the Strategy, adopting it, and making it real as they collect, manage, and use data in ways that support the Department in unlocking the insights that help us better serve Canadians every day. We are all part of the journey toward a more data mature organization.

Appendix 1: Framework definitions

Data Innovation

Business optimization: improving existing products or processes by accessing, manipulating, querying, and analysing data using advanced software, tools, and processes. Applying statistical modelling, AI or other advanced scientific techniques. The functional groupings under this workstream include:

- **Advanced methods:** recognizing patterns and trends within data to identify relationships and generate insights. Accessing, manipulating, querying, and analysing data using a variety of software, tools, methods, and processes
- **Artificial intelligence:** developing data-driven models to enhance departmental efficiency, with expertise in tasks such as text processing (Natural Language Processing), treatment of scanned documents (Optical Character Recognition), and anomaly detection
- **Intelligent automation:** a set of instructions performed by a computer. Can be as simple as finding and replacing a specific word in a text, or as complex as the processing of millions of applications

Analytics for Decision-making: the process of distilling and disseminating the best available evidence from research, practice, and experience to inform and improve policies, programs, operations, and service delivery. The functional groupings under this workstream include:

- **Design and Development:** selecting and applying statistical methods aligned with enterprise objectives, data quality standards, and privacy commitments. Designing and developing solutions and approaches to problems
- **Reporting and Analytics Visualization:** developing dashboards and visualizations that highlight trends, outliers, and patterns in data to inform evidence-based decision-making
- **Provisioning and Dissemination:** providing and translating data into an accessible format to aid others in seeing and understanding trends, outliers, and patterns in data. Finding and accessing fit-for-purpose data to make wise choices

Data Governance and Trust

Process and Policy: having the right **Processes and Policies** in place ensures that departmental data are in the right hands for the right job. The functional grouping under this workstream include:

- **Accountability Framework:** defining clear accountabilities for data grounded in policy and legislation
- **Stewardship:** supporting data stewards in ensuring appropriate access to data that are fit-for-use and compliant with policies, directives, and regulations
- **Guidance and Standards:** providing clear direction through frameworks, guidelines, and/or requirements on how to manage and use data. Ensuring change and standards for data at ESDC align with applicable policy and legislation, as well as to the Department's mandate and Data Strategy vision and objectives

Data Management: the **Data Management** workstream ensures that we build the conditions to appropriately manage data through its entire lifecycle. Data management is key to support programs and generate relevant insights that help make good decisions on behalf of the organization, its employees, its clients, and Canadians. The functional groupings of work under the data management workstream include:

- **Data Integration, Curation and Quality:** cleaning, processing, validating, and transforming data to ensure employees have access to accurate, reliable, and high value data and information that meets their needs. Ensuring the availability of data that are fit-for-use
- **Secure Access:** ensuring secure access to enterprise-wide and other government departmental data assets for (re)use and integration
- **Inventory of Data Holdings:** it starts by knowing what data you have, identifying who stewards the data and understanding how and when it can be used

Risk Mitigation: thoroughly considering the implications that the management and use of data can have on outputs and decision-making, *as well as* using data to understand the impact our decisions will or have had. The functional grouping under this activity includes:

- **Impact Assessment:** considering data at the outset of branch initiatives includes understanding the implications around the use of new analytical methods like AI, automation, or advanced analytics, as well as recommending or implementing mitigation tactics to address risks
- **Privacy, Legal and Ethics:** adhering to legal and ethical standards and approaches to the collection, storage, use, retention, disposal and sharing of data and information
- **Vendor and Tool Assessment:** using a data lens to test potential solutions while considering organizational-wide and cross-government considerations; challenging assumptions and ensuring that solutions meet client and organizational needs

Data Culture and Literacy

Strategic Alignment: bringing a data lens to all initiatives across the Department by supporting early identification of data considerations including links to existing talent, data, and partnerships in the development and implementation of projects and initiatives to ensure success. The functional groupings under this workstream include:

- **Resource Planning and Assessment:** assessing the breadth of skills, tools, and financing required to successfully align resources to ESDC's data needs. Considering the data and capacity required to manage risks, minimise delays, and optimally utilise resources to meet the objectives of projects and initiatives supporting ESDC's mandate
- **Awareness and Engagement:** building the attitudes, knowledge, and behaviours that support a data-driven organization
- **Community of Practice:** endeavours to bring together all stakeholders to generate awareness, foster collaboration, and ensure alignment under ESDC's Data Strategy. Thereby, strengthening and maintaining a responsible and innovative data culture at ESDC

Business Relationship Management: by maintaining strong partnerships and relationships throughout ESDC and across the government, this enhances strategic alignment across all branches towards a common goal of increased data maturity. Alignment is easiest when completed from the start, by providing a strategic and horizontal view across ESDC. The functional groupings under this workstream include:

- **Stakeholder Partnerships:** involves developing internal and external partnerships to better understand each other's needs and to share data and expertise. While making connections and building strategic multi-disciplinary partnerships that develop a communal responsibility toward data so all employees can get the right data into the right hands to make the right choice at the right time
- **Data and Information Sharing:** collaborating with partners across the Department, Government of Canada and other stakeholders outside the federal government helps get the right data, into the right hands, at the right time to support work in service delivery, operations and PARE projects
- **Advisory:** by leveraging existing talent, data assets, and partnerships across the Department to build connections with those who can provide advice and guidance. Supporting departmental projects and initiatives at the outset aids in ensuring that we think through key data considerations

Talent and Capacity Building: investing in employee development to boost data skills ensures ESDC staff can evolve and grow in their field. Ensuring our Department is equipped to leverage its data assets effectively and prudently so we can deliver on the programs and services that Canadians rely on is essential. The functional groupings under this workstream include:

- **Upskilling and Reskilling:** upgrading current skills with complementary training that allows for growth within a role, or training for a new role, ensures ESDC is equipped to leverage data effectively and grow as an organization
- **Data Literacy:** the ability to read, use, understand, and communicate data in context as information. ESDC's Data Literacy Program includes data competencies, personas, and learning paths to help employees better understand and use data in their work, as well as to develop and promote data resources, tools, training, use cases, and testimonials
- **Hiring and Retention:** finding and selecting the right candidates to fill our data needs and job vacancies requires planning. Prevention is fundamental in limiting unnecessary employee turnover or departures that have an impact on business performance and success

Foundational Data Infrastructure

Infrastructure Development: designing, developing, building, and maintaining data systems and solutions that align with organizational needs, ensuring usability and interoperability. The functional grouping of work under this workstream includes:

- **Enterprise Data Architecture (plan and design):** designing data and information rules, standards, and models that define how to collect, organize, store, manage, integrate, and protect enterprise data assets. Designing data and information system solutions that align with organizational needs for usability and interoperability

- **Enterprise Data Engineering** (build and maintain): building and implementing data structures (such as data lakes, data warehouses, or relational databases), using data management tools, software, platforms, and processes to maximise the usability, integrity, and security of data and information from creation to disposition
- **Analytical Platforms and Tools:** using up-to-date platforms, software, and tools to perform data science, AI and other advanced methods at scale. Providing a means to build, as well as deploy data solutions in a standardized, ethical, and governed environment