THE CDO LEADERSHIP ROLE IN DIGITAL TRANSFORMATION

BANK OF CANADA
BANQUE DU CANADA

INFORMATION, DATA, AND ANALYTICS AT THE BANK OF CANADA

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Agenda

- **A bit about us**: Canada's central bank, its mandate and strategic priorities

- **Our call to action**: Harnessing the power of data and our journey to date

- **Our approach**: Enabling and empowering a data-driven organization

- **Putting it in practice**: Data Science use case in Currency

- **A few final thoughts**: Lessons learned

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Background: The Bank of Canada

Mandate: *"To promote the economic and financial welfare of Canada"*

Harnassing the Power of Data

"**We're reimagining our data, analytical tools and models** to enhance our monetary policy decisions and operations."
"The post-pandemic world **calls for new ways** of collaborating as well as innovative technologies and timely data **to support our analysis and decision making**."

-- Excerpt from the Governor's Message introducing the 2022-24 Strategic Plan

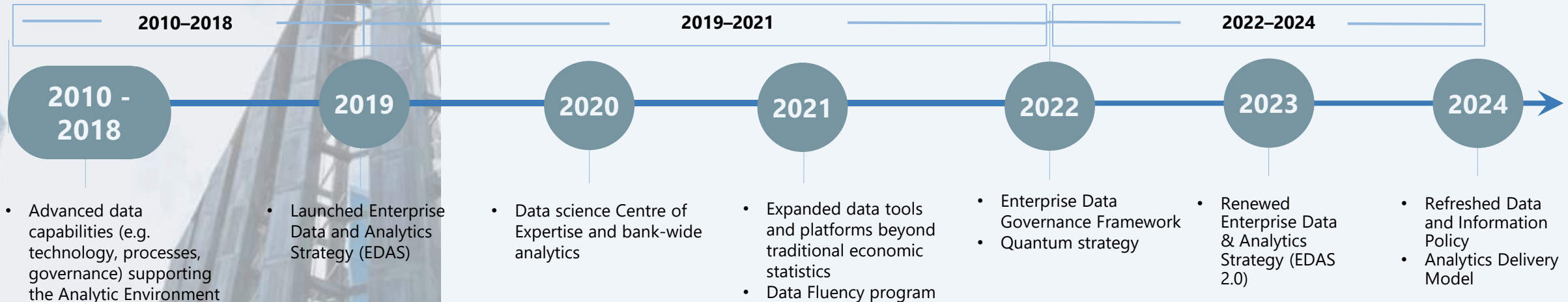## Our Data & Analytics Journey

Building on a Strong Foundation

2019–2021 Highlights

- Advanced skillsets and expertise
- Implemented/renewed data platforms and tools
- Adaptable processes and practices

Harnessing the Power of Innovation

2022–2024 Highlights

- Integrate new types of data and analytics
- Increase the quality, accessibility, and usability of data
- Accelerate adoption of analytics and advanced tools

2010–2018   **2019–2021**   **2022–2024**

2010 - 2018   **2019**   **2020**   **2021**   **2022**   **2023**   **2024**

2010 - 2018
- Advanced data capabilities (e.g. technology, processes, governance) supporting the Analytic Environment

2019
- Launched Enterprise Data and Analytics Strategy (EDAS)

2020
- Data science Centre of Expertise and bank-wide analytics

2021
- Expanded data tools and platforms beyond traditional economic statistics
- Data Fluency program

2022
- Enterprise Data Governance Framework
- Quantum strategy

2023
- Renewed Enterprise Data & Analytics Strategy (EDAS 2.0)

2024
- Refreshed Data and Information Policy
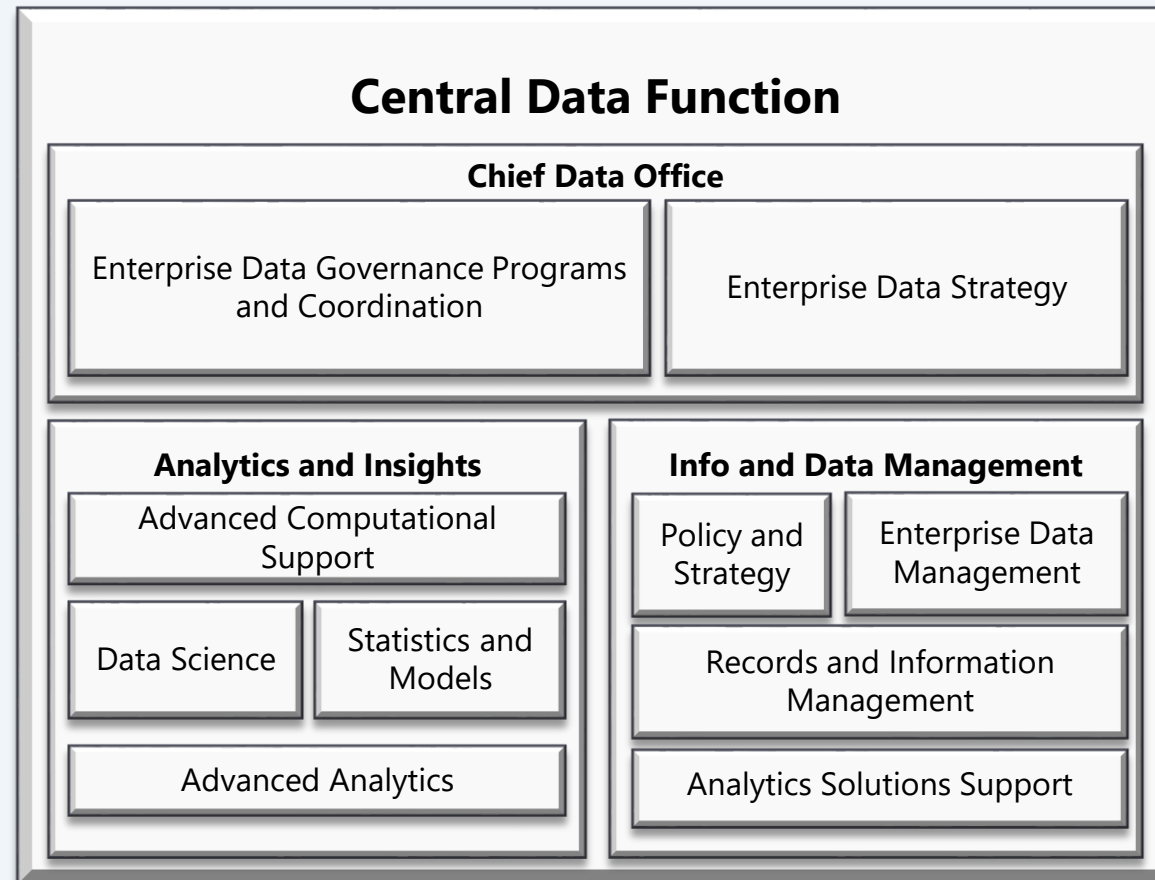- Analytics Delivery Model

Our Team: Information, Data, and Analytics Services (IDAS)

- Flexible structure for enablement and empowerment throughout lifecycle
- Constantly evolving at the pace of organizational maturity growth

OUR VISION

Be the leading data, analytics and information team among all central banks

Central Data Function

Chief Data Office

| Enterprise Data Governance Programs and Coordination | Enterprise Data Strategy |

Analytics and Insights

Advanced Computational Support

| Data Science | Statistics and Models |

Advanced Analytics

Info and Data Management

| Policy and Strategy | Enterprise Data Management |

Records and Information Management

Analytics Solutions Support

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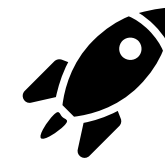# Data: Bank of Canada's Approach

Enable

Enable democratized, governed and responsible use of data and information

## Empower

Empower a data driven organization

Advance

Advance innovation to position us as the leading Central Bank

The vision for data governance at the Bank of Canada is that data are secure, accessible, and trusted. The program looks to ensure data are collected and used in a responsible, sustainable, and meaningful manner to inform decision making, drive insights and innovation, and create efficiencies.
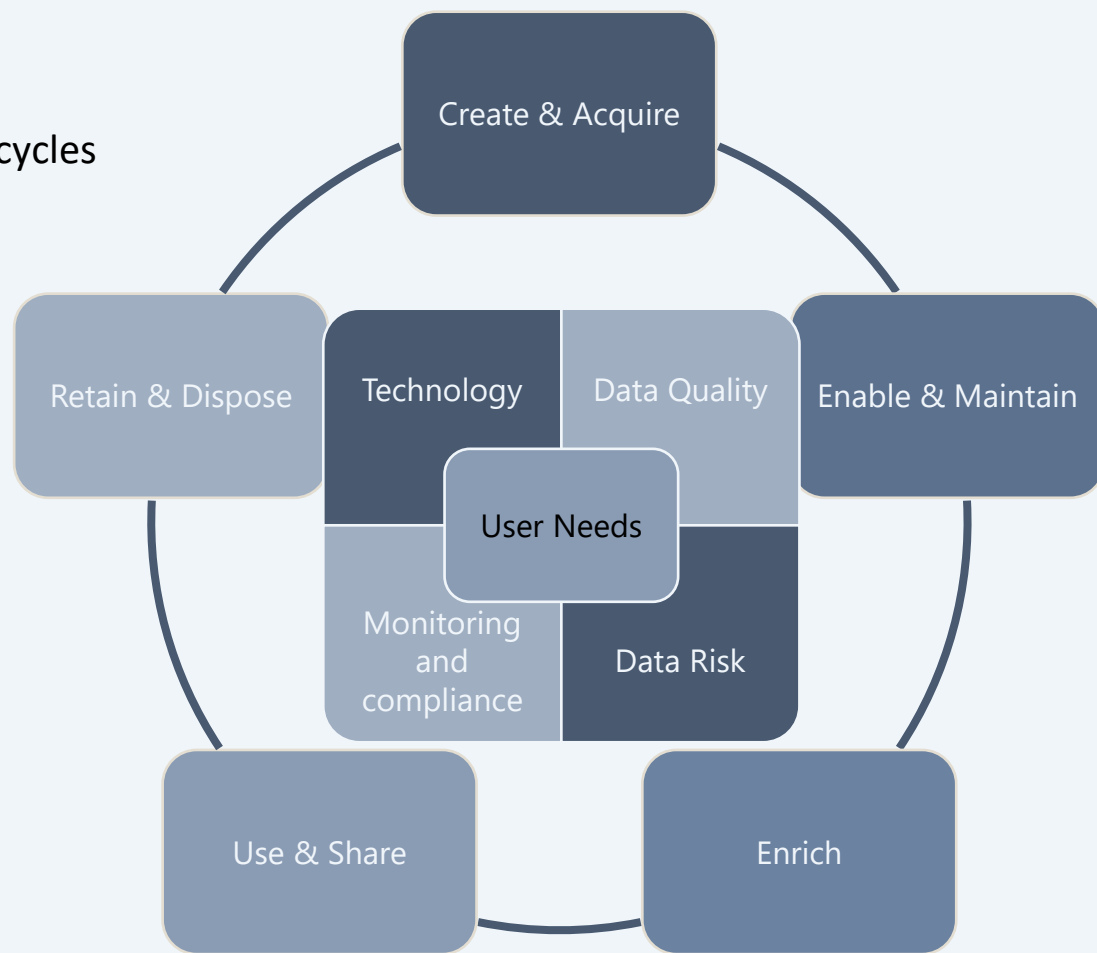
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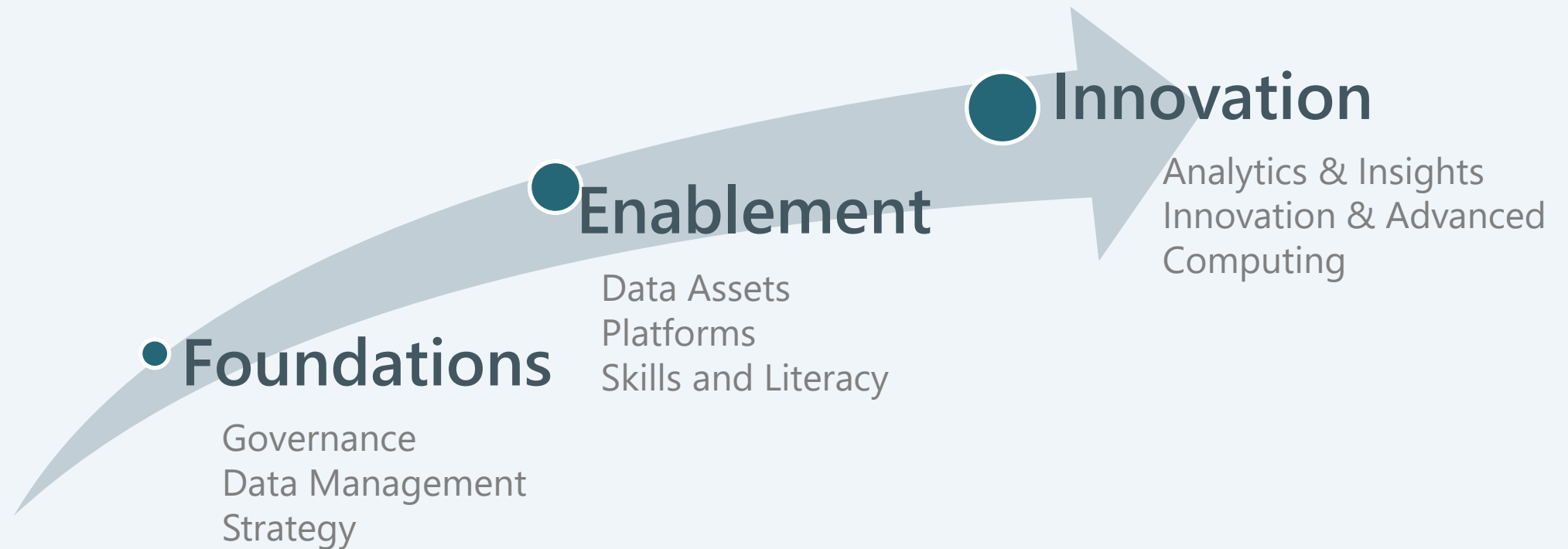
Data and Information Management Lifecycle

The data and information lifecycles engages **every** role:

➢ Data Owner

➢ Enterprise Data Steward

➢ Business Data Steward

➢ Technical Data Steward

➢ Data User

Policy instruments provide guidance across all areas of the Lifecyle

IDAS INFORMATION, DATA AND ANALYTICS SERVICES | LA SECTION DES DONNÉES, DE L'INFORMATION ET DE L'ANALYTIQUE

Our Services Promote a Data-Driven Culture

Governance & Strategy

Set and lead the Bank's data and analytics strategy, governance, policies and priorities

People Capabilities – build broad bank capacity and demand

Enable Bank employees with the right skills, advice & culture to maximize the value of our data

Information, Data, and Analytics Services

Internal and External Data sharing and Partnership

Manage and optimize the relationships with internal & external stakeholders (partners and vendors) to acquire, exchange, influence and learn

Data and Information Management and Products

Manage, optimize and enrich data and information throughout its lifecycle – from accessing, onboarding, storing, organizing to disposition or preservation

Analytics & Innovation

Use high-quality data and analytics to create knowledge/insights, support research and economic work and innovation

Technology, tools and infrastructure

Manage a number of tools and data environments supporting economic analysis and research as well as coordinate and influence other technology decisions impacting data & analytics activities

Data-driven decisions and value extraction

Data-driven decision intelligence, advanced analytics, increased efficiency and optimized use of data

Use Case: Bank Note Wear Analysis

Strategy & Governance

Setting up the data environment in the lake creating reusable patterns and standards

Capabilities (People & Process)

Creation of a 'squad' with Currency & IT departments to test the agile one-team approach to solution delivery

Data, Information and Analytics Services

Producing valuable insights on bill fitness, velocity, machine configuration, amongst others

Technology, Tools & Infrastructure

Piloting migration of Currency data to data lake before implementation of new machines

Objectives

Process & profile high volume, high velocity data

- Retrieve aggregate and note-level datapoints and timeseries

- Profile data to help create business rules and design the data model

- Perform anomaly detection analysis, identify possible data and machine errors

Develop machine learning model to analyze bank note 'fitness'

- Use a machine learning model to classify if a note is unfit

- Discover insights from the factors that affect note fitness
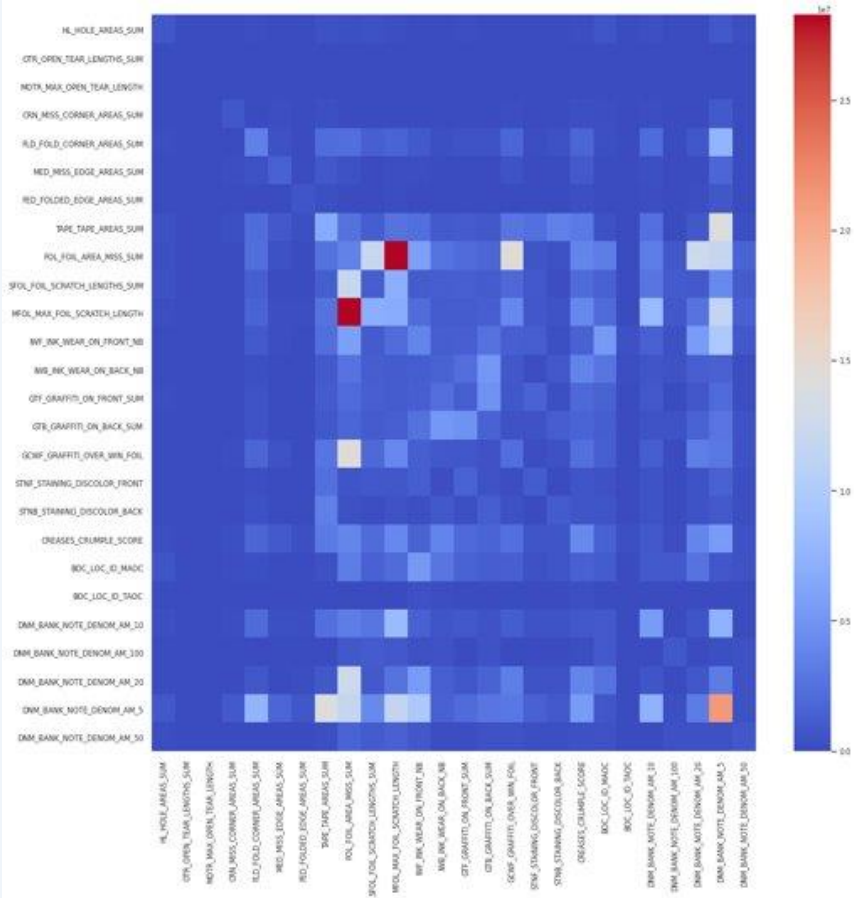
- Present analytics that reach deeper into the data

Results

Anomaly Detection

Examples of machine read issues not observed in aggregate data

Develop machine learning model to analyze bank note 'fitness'

Analytics next steps

- Ability to dial-in thresholds
- Further research into velocity of money; modeling the lifetime of bills
- How wear patterns can relate to the construction of notes
- Understanding the use of money during the pandemic
- Geographic and institutional differences

# Lessons Learned and Recommendations

Enable

Foundations are important and not just technology and platforms. When growing, processes, policies, and patterns become increasingly important

Adopt an integrated planning model where innovation is sponsored across the enterprise and flexibility is built into our decisions

Empower

Empower your teams. Not just the data teams (with tools, appropriate op models, processes, etc.) but also your partners and clients (with skills development, engagement models, curated data products, self-serve capabilities, etc.)

Create patterns, toolkits, policies, and other processes to remove barriers
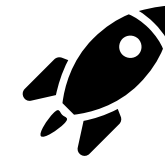
Advance

Deliver for today but design for the future. A portion of your time and resources should be focused on envisioning and designing for future value and insights.

Be open to participating in proof-of-concepts with tech partners as well as clients

THANK YOU

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