

CELENT



CIBC: AI/ML CLOUD PLATFORM

Winner of Celent Model Risk Manager 2023 Award for Data Management and Analytics

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29 March 2023

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EXECUTIVE SUMMARY



FINANCIAL INSTITUTION CIBC

INITIATIVE AI/ML Cloud Platform

SYNOPSIS CIBC has made enhancing customer experience and risk management with AI and ML a priority across the bank by creating a shared AI and ML platform for all business units.

TIMELINES After a 2019 POC was suspended due to the pandemic, CIBC relaunched the project in 2022. In January, they set up the development environment. In February, onboarded first business unit client. In April 2022, landed production data and the AI/ML platform was operational. They onboarded a second BU client in May and a third in June.

KEY BENEFITS

- Enables bank to fully leverage Advanced Analytics and AI, quickly and in an agile manner
- Scales AI while minimizing operational risks of cybersecurity, data privacy, and model bias
- Bank clients benefit from the personalization, convenience and speed of AI/ML powered solutions

KEY VENDORS Microsoft Azure, Databricks

CELENT PERSPECTIVE



Accelerate AI adoption with a single AI infrastructure

The rationale for decentralized IT governance is that it allows business units to be more nimble and faster to market with new capabilities. The complexity and pace of change in AI technology flips that conception.

By establishing a single centralized AI infrastructure with a single set of best-in-class tools, CIBC has a turnkey approach to AI that allows its businesses to jump over the time intensive processes of collecting and cleansing data, complying with data governance requirements, assembling the right development tools and sourcing the requisite computing power.

In one of its first uses, the platform reduced the time required to stand up a new AI-based analytical capability from an estimated 9 months down to 3.



Lower data risk with public cloud

Common wisdom and common practice is that data kept on premise is more secure than data stored on the public cloud. Here is another instance of AI flipping a common conception. Data scientists work with multiple sets of sensitive data that should not be distributed across multiple BU servers or even employee devices, but in a secure and private environment.

With AI/ML Platform data stored on the Azure cloud, it can be freely analysed and manipulated by data scientists while staying on the platform. Since the AI solutions also run on the Azure cloud, data does not have to be moved from the platform. In fact, it cannot be moved from the platform – users can only export the outputs from the analysis.



Let Data Scientists do what they do best

Attracting and retaining qualified data scientists is a priority. The AI/ML platform improves the job satisfaction of these sought-after employees by giving them a familiar toolset they want to work with and powerful computing resources while minimizing the distractions of data governance and security by taking care of those concerns separately.

DETAILED DESCRIPTION



We need trusted and secure data consumption platforms where our data scientists can build their models with confidence

Ozge Yeloglu, VP of Advanced Analytics and AI, CIBC

Introduction

CIBC (Canadian Imperial Bank of Commerce) is one of the “Big Five” banks in Canada with services that span personal and commercial banking, wealth management, investment banking, credit cards, and mortgages. CIBC was formed through the 1961 merger of the Canadian Bank of Commerce (founded in 1867) and the Imperial Bank of Canada (founded in 1873). As of year-end 2022, CIBC has \$1.4 trillion in customer deposits, 13 million customers over 1,000 banking centres and 3000 ATMs

Table 1: CIBC Snapshot

Year Founded	Formed through 1961 merger of Canadian Bank of Commerce and Imperial Bank of Canada
Assets (2022)	Can\$944 billion
Headquarters	Toronto, Ontario, Canada
Employees (2022)	50,000
Other Key Metrics	1,000 branches in 10 provinces and 3 territories
Relevant Technologies and Vendors	Microsoft Azure Cloud, Databricks

Source: CIBC

Scaling technology in a large, complex enterprise is often slow. To accelerate adoption of AI and Machine Learning across the bank, CIBC has built a central, shared AI/ML Platform in the Cloud.

By taking care of governance and security concerns up front, CIBC has given its lines of business a platform to develop, test, run and monitor AI/ML models quickly, efficiently and safely. This shared service brings BUs AI expertise and open source software, hosted on the scalable power and leading capabilities of the Microsoft Azure public cloud.

Opportunity

Artificial Intelligence and Machine Learning are key components of CIBC's strategy to compete and win with data. Ozge Yeloglu, head of CIBC's Advanced Analytics and AI group, is at the heart of it. Initially Ozge worked with individual LOBs to apply AI/ML technology successfully to improve the client experience and enhance internal processes. These early forays soon proved their value and Ozge and her team's focus turned from proving the value of the technology to scaling it within the bank.

What does it mean to scale AI in a major enterprise? The Advanced Analytics and AI team wanted to put the power to realize value from AI in the hands of the LOBs and functional groups because they are closest to the customer and closest to bank operations. But few of those teams had the resources to develop AI technology from scratch. They would be challenged to assemble best in class tools needed to develop AI, and they would have to ensure the models they developed were within CIBC's security, data privacy and data governance controls.

So rather than trying to scale by building AI capabilities within each LOB, the Advanced Analytics team decided the best approach to scaling AI was to build a centralized AI/ML Data Platform that provided the LOBs and functional groups with the data, development tools and expertise to build AI models – on a platform that could ensure the security, privacy and governed use of that data.

It meant providing the LOBs with a new platform they can use to develop, test, run and monitor AI/ML models for themselves with supporting services and access to open source tools, all while satisfying the concerns of regulators, security, privacy, governance and other stakeholders.

However, the team was wary of some of the pitfalls that other companies have experienced with their AI efforts. A report from management consultancy Bain¹ states that “fewer than 20% of [technology] companies have structured their products for AI with an integrated view of customer product usage, consistent data infrastructure with appropriate access rights,” and the banking industry is no different.

Platform Design

To avoid these pitfalls, there were some key design principles in building the platform. The platform had to:

- **Be powerful enough to run Advanced Analytics.**

Advanced Analytics & AI/ML initiatives typically require powerful computational resources. For instance, to speed computational time, the platform infrastructure needed to make GPU enabled compute as well as CPU based compute available to users in a standardized way.

- **Standardize on an Open Source Stack.**

Modern advanced analytic workloads, including AI/ML are largely based on open-source tools, such as Python. The expertise required to use open-source tools poses significant barriers to many analytics teams. The

AI/ML Platform provides a standard set of best-in-class, open source tools so that LOBs do not have to reinvent the wheel.

- **Establish a Common Security Model.**
Analysts & Data Scientists require access to production data. The AI/ML Platform enables this by way of a secured and controlled environment that is governed responsibly.
- **Enable Operationalization of Models.**
The platform not only lets the LOBs design and test models, it also runs them once they are ready for production. Operationalization of AI requires secure and dynamically scalable patterns for both batch and real-time deployment. The AI/ML Platform enables CIBC to build MLOps pipelines to securely automate packaging of models.
- **Universal Applicability**
The platform was built to support a broad, enterprise scope. It can be adopted by any unit in the Bank that wants to use it with not only a technical platform ready to scale, but also the supporting processes, education and advisory capability to help LOBs get up and running.

Solution

The AI/ML Platform was built on a shared Microsoft Azure cloud platform with governed and secure access to open source tooling. It comprises three environments: Development, Training & Inference.

- Development is a non-Production environment generally used for testing
- Training is a production environment used by data analysts & data scientists. End users requiring access to production data operate in the Training Environment.
- Inference is an environment for production jobs, managed and accessed by operations teams.

The platform allows users to develop, track and share experiments and models using common tools, and to ingest, store, analyse and share data through on demand access to virtual machines.

The platform is a physical manifestation of CIBC's federated, hub and spoke operating model. It was built in a multi-tenant format, but data access, resource and billing are all segregated by LOB. LOBs have full autonomy over the scope of compute & storage resources required within their defined "namespace", and no other LOBs have access to that data unless sharing is intentionally authorized following CIBC's data governance processes.

The team's use of a federated operating model abstracts away the complexity of infrastructure provisioning, cloud onboarding & cloud operations. This removes administrative headaches and allows the data scientists to focus on data science. Getting the go-ahead to manage all these considerations on behalf of the LOBs was a considerable effort that began with educating governance and other groups about the unique nature of AI/ML development. It required relationship building and a persistent emphasis on the shared pursuit of enterprise value.



This centralized way of doing things allowed us to work closely with Information Security and Data Governance teams on behalf of our partners.

Ozge Yeloglu, VP of Advanced Analytics and AI, CIBC

Innovation Highlights

Putting this all on the Cloud. The platform was built on Cloud, specifically Microsoft Azure. In a highly regulated industry, and considering the sensitive data that banks safeguard, this was a novel and challenging pursuit that many other banks have struggled to realize.

The platform is designed for enterprise adoption. It is not siloed within the lines of business. This adds complexity and challenge, but also tremendous value. Each new line of business onboarded can leverage existing capabilities, while also introducing new capabilities for their unique requirements. These capabilities then become available to others on the AI/ML platform, and as repeatable patterns with which to build their own.

The platform provides a standard set of tools. This gives data scientists throughout the bank access to best in class open-source tools with only one enterprise platform team having to navigate the multiple security and governance considerations required to adopt a new technology in the enterprise, on behalf of LOBs.

Timeline

A POC began in 2019, but was paused in response to the global pandemic until 2022. In January 2022, CIBC began shifting the pilot into production by setting up the development environment of the AI/ML platform. The Advanced Analytics and AI team onboarded the first business unit client in February and by April 2022 the AI/ML platform was operational and data being consumed.

The second business unit came on board in May and the third in June. Onboarding business units includes incorporating new unit-specific data sources, setting up reporting, providing user access and training.

Results

Quicker Time to Market

One early adopter team had a rapidly approaching regulatory deadline for which time CIBC needed to demonstrate a new analytical capability and begin delivering regular reports.

Previously, even with a significant addition of talent and resources, it would have taken this small team 9+ months to navigate the required processes, scheduling, and technical challenge required to develop this new capability. Working on the

AI/ML Platform the team was able to stand up the required capability in 3 months and reduced their up-front platform costs by at 75% from what they would have incurred had they done it on their own.

Lower Compute Costs

The AI/ML Platform has given data scientists across the bank access to scalable computing power on demand, with costs incurred based on actual consumption. By consolidating demand for computing power and storage, CIBC estimates a 30% reduction in this compute cost, and even greater savings from storage.

These efficiencies will continue to grow as the platform scales to dozens of groups and even larger numbers of data scientists across the bank.

Improved Data Risk Management

The platform aligns with CIBC's best practices in data management and governance and data security. Data cannot be moved from the platform, and this is strictly monitored. By enabling access to data in a central, secure, shared environment rather than solving these issues in siloes, the bank reduces the risk of data privacy violations, data corruption and data breaches.

Improved Talent Retention.

In a highly competitive market, data talent can become frustrated with the limited tooling, long processing times, limited compute, and heavy governance and security concerns of a major bank. This platform insulates data scientists from those realities and improves their employee experience by giving them a Cloud-powered platform with vast computing resources, with familiar open-source tools, where governance and security concerns are already considered.

Future Plans

The Advanced Analytics and AI team continues to build out the platform, onboarding new teams, enhancing the operating model and introducing new foundational capabilities and tools.

Planned enhancements to the operating model include: streamlined onboarding support, continued collaboration with enterprise data governance, a website for documentation, tutorials and guides, access to custom Python libraries and model APIs, and "One Door" support and coaching from the Enterprise Advanced Analytics & AI group.

Planned enhancements to capabilities and tooling include: integration with CIBC's DevOps stack, a feature store to accelerate the development of data science and machine learning products, and the addition of a wide range of new datasets.

LEVERAGING CELENT'S EXPERTISE

If you found this report valuable, you might consider engaging with Celent for custom analysis and research. Our collective experience and the knowledge we gained while working on this report can help you streamline the creation, refinement, or execution of your strategies.

Support for Financial Institutions

Typical projects we support include:

Vendor short listing and selection. We perform discovery specific to you and your business to better understand your unique needs. We then create and administer a custom RFI to selected vendors to assist you in making rapid and accurate vendor choices.

Business practice evaluations. We spend time evaluating your business processes and requirements. Based on our knowledge of the market, we identify potential process or technology constraints and provide clear insights that will help you implement industry best practices.

IT and business strategy creation. We collect perspectives from your executive team, your front line business and IT staff, and your customers. We then analyse your current position, institutional capabilities, and technology against your goals. If necessary, we help you reformulate your technology and business plans to address short-term and long-term needs.

Support for Vendors

We provide services that help you refine your product and service offerings. Examples include:

Product and service strategy evaluation. We help you assess your market position in terms of functionality, technology, and services. Our strategy workshops will help you target the right customers and map your offerings to their needs.

Market messaging and collateral review. Based on our extensive experience with your potential clients, we assess your marketing and sales materials—including your website and any collateral.

MODEL RISK MANAGER CASE STUDIES

[DBS Bank: Reimagining the Corporate Credit Risk Management Process](#)
March 2022

[ABN AMRO: KYC Investigations](#)
March 2022

[BNP Paribas S.A.: One KYC](#)
March 2022

[Fincare Small Finance Bank: Centralize, Digitize, and Automate the Audit Process](#)
March 2022

[Forcht Bank: Cybersecurity Excellence through Strategic Outsourcing](#)
March 2022

[ICICI Bank: Strategic Management of Retail Debt During the Pandemic](#)
March 2022

[PNC Bank: PINACLE® Payee Account Validation](#)
March 2022

[VPBank: Regtech Compliance Transformation](#)
March 2022

[Credit Suisse: Risk360 Advanced Risk Analytics Platform](#)
March 2021

[Fino Payments Bank: Enterprise-Wide Fraud Management During the Pandemic](#)
March 2021

[Goldman Sachs: Machine Learning-powered Watchlist Screening Tool](#)
March 2021

[HSBC: Insurance-focused Transaction Monitoring Solution Powered by Machine Learning and Cloud](#)
March 2021

[Standard Bank: KYC On The Go - A Component of Remote Customer Onboarding](#)
March 2021

[State Street Global Advisors: Measuring Macroeconomic Risks for Portfolio Management](#)
March 2021

[Swedbank: Modernizing Card Fraud and Improving Customer Experience](#)
March 2021

[United Overseas Bank: Machine Learning-powered Alert Triaging for AML Transaction Monitoring and Name Screening](#)
March 2021

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