

re: **IDC Canada DX Spending Statements 2021-2024**

date : April 2021

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REGIONAL STATEMENTS

Canadian Digital Spend

As business leaders look ahead to 2021, digital transformation (DX) will play an increasingly critical role in the post-pandemic economy.

According to IDC Canada's economic model and taking into account assumptions within the model, Canadian spending on digital transformation (DX) technologies and services is expected to be approximately CAD\$160 billion between 2021-2024, growing by thirteen percent year-over-year¹.

Digital transformation technologies are truly novel, such as Big Data, Blockchain, Cloud, Internet of Things (IoT), Cognitive/AI Systems, Machine Learning, Mobile, 5G, Next Gen Security, 3D Printing, AR/VR, and Robotics.

In 2021 and beyond, Canadian organizations will utilize Digital Transformation (DX) to accelerate the digitization of their workflow, improve mental health support for their employees, adopt on-demand infrastructure, increase remote access, incorporate principles of zero trust, and develop new partnerships and digital investments that accelerate innovation in sectors such as retail, healthcare, and financial services².

¹ Source: IDC Worldwide Digital Transformation Spending Guide, 2020

² Source: IDC Canada Predictions 2021: Digital Priorities for the Future Enterprise (2020)

Alberta Digital Spend

In the face of the pandemic, digital transformation (DX) has proven to be key in keeping businesses afloat by enabling remote work, agile business, and external digital engagement. As they journey to the next normal, companies are looking to upgrade hardware, software and services.

Comparing expected DX forecast before the pandemic to actual forecast, 2020 DX spending in Alberta decreased by CAD\$351 million. COVID-19 has had an undeniable impact on investments above and beyond those necessary for business survival. The COVID-19 recession has seen the fastest, steepest downgrades in global GDP growth projections among all global recessions since 1990³. For Alberta, the three-year growth rate for DX spending has declined by seven percentage points.

Regardless of the setbacks, Alberta's spending on digital transformation is set to surpass CAD\$20 billion between 2021-2024, growing by thirteen percent on average across all industries. Alberta accounts for 13 per cent of the \$160 billion national DX spend over the next four years.

Between 2021 to 2024, nearly 50 per cent of the total DX spend by companies across Alberta will be in developing, marketing, and delivering support and deployment services.

Of Alberta's CAD\$20 billion forecasted spend on digital transformation (DX) between 2021 to 2024, CAD\$5.8 billion will be spent in the energy and environment sector and CAD\$14.1 billion in other major sectors including agribusiness, financial services, manufacturing, transportation and logistics, retail, tourism and recreation, life sciences and creative industries.

The three industries in Alberta that will invest the most in digital transformation from 2021 to 2024 are:

- Energy and Environment (including Oil and Gas): CAD\$5.8 billion
- Transportation and Logistics (including Aerospace and Defense): CAD\$1.6 billion
- Financial Services: CAD\$1.5 billion and Retail: CAD\$1.5 billion

Alberta's projected year-on-year for digital transformation spend across all sectors from 2021 to 2024 is 13 per cent.

³ Source: Census Economics, World Bank (2020)

Calgary CMA Digital Spend

General Statements:

As businesses look ahead to 2021, digital transformation (DX) will play an increasingly critical role in the post-pandemic economy.

More now than ever, corporate innovation is happening in Calgary! Whether it's feeding, fueling, healing, or moving, Calgary is solving the world's problems through digital transformation.

Calgary companies are strategically investing in digital transformation (DX) to bring about a cultural, technology, workforce, and paradigm shift in the organization, and enabling successful business outcomes.

Calgary is the first and only city in Canada to commission IDC Canada to measure digital spending across its industries. Digital transformation is quickly becoming the largest driver of new solutions and technology investments among Calgary businesses.

Companies working in the energy and environment, transportation and logistics, financial services, and creative industries are set to invest the most in digital transformation (DX) between 2021 to 2024, and the most rapid adopters of DX will be oil & gas and retail.

DX Spend:

Comparing expected DX forecast before the pandemic to actual forecast, 2020 DX spending in Calgary decreased by CAD\$284 million. With DX growth in Calgary understandably depressed due to impacts of COVID-19 on business spending and confidence, DX spending in Calgary has declined by seven percentage points, still positive and growing by thirteen percent on average across all industries.

From 2021 to 2024, Leading the Way in Digital Economy and Post-COVID Recovery, Calgary Businesses Will Spend Nearly CAD\$7.5 billion Across Industries on Digital Transformation, According to a New IDC Spending Guide

Of Calgary's CAD\$7.5 billion forecasted spend on digital transformation (DX) between 2021 to 2024, CAD\$2.3 billion (or 30 per cent) will be spent on digital transformation in the energy and environment sector.

CAD\$5.2 billion (or 70 per cent) of Calgary's CAD\$7.5 billion total forecasted digital transformation (DX) spend between 2021 to 2024 will be in sectors outside of energy – including financial services, creative industries, retail, transportation and logistics, life sciences, agribusiness, and manufacturing.

The three industries in Calgary that will invest the most in digital transformation from 2021 to 2024 are:

- Energy and Environment (including Oil and Gas): CAD\$2.3 billion
- Transportation and Logistics (including Aerospace and Defense): CAD\$790 million
- Financial Services: CAD\$609 million

Growth:

Digital Transformation (DX) spending statements

Calgary's DX spend is projected to grow by 13 per cent year-over-year by 2024. This growth is led by companies spending in hardware, software and services across industries including energy and environment, financial services, creative industries, retail, transportation and logistics, life sciences, agribusiness, and manufacturing.

From 2021 to 2024, Calgary's digital transformation spend is forecasted to be 37 per cent of the provincial spend and four per cent of the national total.

70 per cent of Calgary and Alberta investment in digital transformation will be made outside of the energy and environment sector – including creative industries, retail, transportation and logistics, life sciences, financial services, manufacturing and agribusiness.

Spending on digital transformation (DX) in hardware, software, and services across key sectors in Calgary and Alberta is forecasted to grow at a rate of 13 per cent year-on-year between now and 2024.

SECTOR SPECIFIC STATEMENTS

Agribusiness

With growth projection at 13 per cent year-over-year, Agribusiness DX spend is projected to be CAD\$684 million in Alberta and CAD\$246 million in Calgary by 2024.

Creative Industries

Creative industries took a major global hit due to the pandemic. However, with the ability of Alberta's new travel program to facilitate a shortened quarantine, Netflix, HBO, and other studios have been increasing their presence in Alberta.

Alberta's Creative Industries will spend over CAD\$1.3 billion on digital transformation (DX) by 2024. This accounts for about 9 per cent of Canada's DX spend in this sector.

Zugalu Entertainment

Case Study

Zugalu Entertainment is an indie game studio based in Calgary, Alberta. They have invested more than one million dollars in technology, including the revitalization of Zugalu's Digital Community Hub and the release of six digital titles over various platforms that connect and engage users over the last four years.

Their successes, combined with the support from the Canada Media Fund, allow us to make a sizable investment (\$3.5 Million) into the development and exploration of Artificial Intelligence (AI) for their biggest title to date Thrive: Heavy Lies the Crown. This allows us to collect and extrapolate large amounts of data to improve the game experience for players, as well as train AI models for enemy opponents.

Augmented and virtual reality have changed the way products are advertised, marketed and showcased on a global scale. Customers can view goods they are buying like never before and this has resulted in an increase in sales by 20 - 30%.

"Zugalu Entertainment is thrilled to be a part of Alberta's Digital Transformation. As a born and raised Calgarian... I see a bright future ahead as we strive to diversify our economic outlook using tools and technology that propel us to an enlightening, entertaining and prosperous future."

Branden Sloane, President and CEO

With growth projection at 13 per cent year-over-year, Creative Industries DX spend is projected to be CAD\$1.3 billion in Alberta and CAD\$566 million in Calgary by 2024.

Energy and Environment

Calgary has a long history with energy industries where business intelligence solutions have transformed operations, enabling companies to collect and analyze massive amounts of data to drive timely and informed decision making.

In 2021 and beyond, the energy and environment sector will drive cognitive/artificial intelligence systems within hardware, software and services spending in Calgary. With growth projection at 13 per cent CAGR, Energy and Environment DX spend is projected to be CAD\$5.8 billion in Alberta and CAD\$2.3 billion in Calgary by 2024.

One fourth of Canada's energy and environment (utilities, renewables, oil & gas, cleantech) digital transformation (DX) investment will be made by Alberta companies between 2021 to 2024.

Alberta's CAD\$5.8 billion spend on digital transformation in the Energy and Environment sector is equivalent to about 30 per cent of the spend across all sectors.

SUNCOR Energy

Case Study

In 2019, \$830 million was invested by Suncor in technology development, including digital transformation. The company has been a world leader of investment into Autonomous Haul Systems and plans to deploy over 150 autonomous electric vehicles at their field sites over the next 6 years. Suncor Energy will invest an additional \$1.4 billion in low-carbon power cogeneration at its Oil Sands Base Plant.

"As part of our approach to innovation, we are harnessing digital technology in areas such as improved data analytics, artificial intelligence technology and automation... Digital solutions promise to significantly change how we do business -in a very positive way - and is a key focus area as we move forward."

- Mark Little, CEO

Energy and Environment – Oil and Gas

Within Energy and Environment, Alberta's Oil and Gas sector is forecasted to be the fastest adopter of digital transformative technologies, growing at 15 per cent CAGR from 2021 to 2024 to total CAD\$2.5 billion by 2024. This accounts for 32 per cent of Canada's DX spending in this sector.

Financial Services

Financial Services have come through largely unscathed from the pandemic, however a possible shift can be seen in branch strategy for banks and insurers with an increase in remote work and digital workflows and reduction in the number of physical branches.

With growth projection at 11 per cent year-over-year, Financial Services DX spend is projected to be CAD\$1.5 billion in Alberta and CAD\$609 million in Calgary by 2024.

ATB Financial

"ATB Financial is building, investing and partnering to build on the strengths of Alberta's growing reputation as a global leader in technology and innovation. From advancements in artificial intelligence, data and our extensive suite of digital products and services to leadership in digital identity and trust—ATB is committed to helping to keep Alberta and ATB at the forefront of the digital economy."

- Denise Man, Chief Technology Officer, ATB Financial

Life Sciences and Health

Comparing expected DX forecast before the pandemic to actual forecast, Life Sciences and Health digital spend naturally saw a major increase because of the pandemic.

Digital transformation (DX) spend in Alberta's Life Science and Health sector is projected to be CAD\$1.3 billion, growing at a compound annual rate of over 12 per cent per year.

Calgary's Life Sciences and Health DX spend is projected to grow by 12 per cent CAGR from 2021-2024, totaling CAD\$428 million by 2024.

Circle Cardiovascular Imaging

Case Study

Circle Cardiovascular Imaging is the market leader in developing and commercializing Artificial Intelligence (AI) enabled cardiovascular software. Circle is investing \$4 million in 2021 alone in AI to revolutionize modern healthcare and life sciences. As the digital transformation sweeps across the healthcare industry, AI in health is projected to save the health care system \$150 billion domestically by 2026 through improved diagnostic information, risk detection, primordial prevention, and enabling personalized medicine.

"At Circle CVI, we are all driven every single day by making the best possible diagnostics available to patients. What we do helps people around the world. And that's why we keep innovating, simplifying, automating, and displacing other modalities of imaging (such as nuclear) that carry risk. If we can do it better—faster, easier, cheaper and safer—that's a good thing."

– Greg Ogradnick, CEO Circle Cardiovascular Imaging

Manufacturing

Growth in manufacturing hinges on a combination of global commodity prices, export markets and increased business investment in machinery and equipment.

With growth projection at 13 per cent CAGR, Manufacturing DX spend is projected to be CAD\$737 million in Alberta and CAD\$259 million in Calgary by 2024.

Attabotics

Case Study

Attabotics has developed automation and advanced manufacturing practices to offer the world's first 3D robotics supply chain system that is reducing warehouse needs by 85% and transforming modern commerce. By empowering retailers to place fulfillment centers near high-density urban areas, Attabotics helps decrease carbon emissions and create jobs. In late 2019, Attabotics opened a digitally integrated, highly automated, industry 4.0 manufacturing facility based in Calgary as part of an investment forecasted to reach \$17.9M by 2021. Leveraging the extensive experience of local YYC talent and advancements in core technologies, the company is set to realize significant future growth in Canada and globally.

"Through our contributions focused on R&D initiatives, job growth, and key partnerships, we have been able to broaden the reach of innovative digital technologies within Alberta and beyond. Digital evolution is central to the success of the retail and eCommerce industry and the future of the Canadian economy."

–Scott Gravelle, CEO/CTO

– Greg Ogrodnick, CEO Circle Cardiovascular Imaging

Retail

With retail sector taking a hit serious in 2020, the realities of retailing have changed dramatically. In today's highly-fluid social, economic and health environment, retailers are setting entrenched digital processes into their workflow to manage demand fluctuations, maintain cash reserves, ensure safety of employees and customers, expand their online presence, and overcome longer-term supply challenges.

Looking at current market and future trends, consumer interests have increased in areas such as smart home technologies, personal health, and fitness.

With growth projection at 13 per cent year-over-year, Retail DX spend is projected to be CAD\$1.5 billion in Alberta and CAD\$533 million in Calgary by 2024.

Tourism and Recreation

With growth projection at 13 per cent year-over-year, Tourism and Recreation DX spend is projected to be CAD\$105 million in Alberta and CAD\$27 million in Calgary by 2024.

Transportation & Logistics

From 2021 to 2024, Transportation & Logistics DX spend is projected to grow by 12 per cent year-over-year, with CAD\$1.6 billion DX spend in Alberta and CAD\$790 million in Calgary.

Transportation & Logistics DX spend in Calgary accounts for 48 per cent of the province's DX spend in the sector.

Hexagon

Case Study

Hexagon's Autonomy & Positioning division has been investing in high-tech development in Calgary for over 25 years. In that time, the company has invested hundreds of millions of dollars into the development of high precision GPS digital equipment and autonomous vehicle. Over the next four years, the company is projecting to invest approximately \$225M in R&D with the compound annual growth rate of 14% to design the next generation of off-road autonomy vehicles in Calgary.

This incredible investment has been possible because of the amazing engineering graduates from the University of Calgary and the University of Alberta. Hexagon's Autonomy & Positioning division, through its NovAtel brand, has had a long-standing relationship with the University of Calgary Geomatics department. The City of Calgary, through Calgary Economic Development, has been incredibly supportive of the company's efforts, offering access to infrastructure needed to collect real-world data on our autonomous vehicles.

"We are facilitating visionary innovation through customer growth partnerships that are advancing many global mega-trends – unmanned mobility, last mile delivery, precision agriculture, unmanned aerial systems and smart-city technologies – all increasingly connected and autonomous. Today, and tomorrow, we will work with you to advance the revolution in connected and autonomous productivity and technology, to ensure a scalable, sustainable future."

– Michael Ritter, President, Hexagon's Autonomy & Positioning division

Transportation & Logistics - Aerospace and Defense

Within Transportation and Logistics, Calgary's Aerospace and Defense DX spend is projected to grow by 12 per cent CAGR from 2021-2024, with a total DX spend of CAD\$38 million by 2024.

METHODOLOGY

Digital Transformation Spending forecasts were developed in partnership with IDC Canada. They are based on industry classifications provided by Calgary Economic Development and IDC's Worldwide Semiannual Digital Transformation Spending Guide Taxonomy, 2020: Release V2, 2020.

IDC CANADA – [ABOUT IDC](#)

1. Use Cases for each Industry: <https://www.idc-dxusecases.com/>. Towards the bottom of each webpage you can download a visual depiction of the use cases for each industry.
2. IDC Methodology for collecting Data on Digital Spending:
 - IDC uses a variety of primary and secondary sources for sizing and forecasting markets including interviews with IT vendors, public financial records, historic market data, and user surveys. They then enter this demand- and supply-side data into proprietary models.
 - IDC Data Methodology with details: <https://www.idc.com/ca/about-idc/methodology>
3. IDC's Methodology for custom forecasting for Calgary Economic Development:
 - **Base Data:** The base data for this project was Canadian Digital Transformation spend by IDC Industry, Year, Technology Group. This was pulled from the 2018H1 edition of the Worldwide Semiannual Digital Transformation Spending Guide.
 - **Alberta Data:** The data was then segmented down to the provincial level (Alberta vs other provinces) using the Canadian IT Market Forecaster.
 - **Calgary Data:** Further segmentation to the Calgary level was done using Statistics Canada Business Counts considering 2 factors: proportion of establishment counts and proportion of number of employees in Calgary vs the rest of Alberta.
 - **How Industries Were Mapped:** IDC industries were mapped to CED industries using the mapping sent by Calgary Economic Development (same NAICS that CED used for industry cluster analysis).

COMMUNICATION STATEMENTS

Note: All estimates are in Canadian dollars unless otherwise specified.

IDC Canada examines DX spending in Canada in the areas of software, hardware and services.

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Digital Transformation Spending forecasts were developed in partnership with IDC Canada. They are based on industry classifications provided by Calgary Economic Development and IDC's Digital Transformation Spending Guide (Release Version Nov 2020).

Alternatively, when minimal print or web space exists, any external display of any portion of the IDC Content will at minimum show Source: CED and IDC Canada or in the case of a web banner image, the related landing page will identify either of the above Source statements.