

DIGITAL TRANSFORMATION (DX) OF CALGARY INDUSTRIES

**Spending by industry in Alberta forecast at \$18.4 billion
through 2022**

2020

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"The Canadian spending on digital transformation (DX) is forecasted to reach \$28 billion in 2020 with a growth rate of seven per cent according to the new IDC Worldwide Digital Transformation Spending Guide, despite the challenges presented by the COVID-19 pandemic. However, the growth is notably slower than 2019, due to the impacts of the pandemic, but expected to recover quickly in the following years (2021-2023) with a five-year compound annual growth rate of (CAGR) of 13 per cent."

– International Data Corporation Canada

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FOREWARD

The world is changing faster than ever. Traditional boundaries of business are disappearing as the digital world creates new ways of creating, interacting and working. To navigate the era of digital transformation (DX), high-tech businesses, industry clients and end users are taking forward-looking approaches to digital transformation. Calgary companies are taking charge of key drivers that enable them to respond to the digitalization of our society and our businesses.

A creative and entrepreneurial city, Calgary businesses recognize opportunities from digitalization and are using them to gain a competitive edge.

This report aims to highlight spending on digital transformation by Calgary's leading industries. Calgary Economic Development collaborated with International Data Corporation (IDC) Canada to conduct analysis on digital transformation spending from 2019 through 2022 for Calgary and Alberta.

This perspective on digital transformation will help in numerous areas, including determining investment in digital infrastructure, assessing education to match the job market, and creating business efficiencies. Continuing to pursue these insights in the context of our economy is a crucial step in strategically leveraging our strengths to become more competitive.

Digitalization is a fundamental driver of economic transformation and presents a unique opportunity to shape our future. It is an ongoing initiative for Calgary Economic Development focused on new themes arising from the latest developments and trends from digitalization and their impact on businesses and the community.

"There is a fast-growing tech scene in Calgary. We wanted to quantify the digital spend for the key engines of growth and innovation to ensure companies and top talent realize the scope of opportunity we have in this city to take on global challenges. We intend to be disruptors in industry in the new economy – not the disrupted."

*- Mary Moran, President and Chief Executive Officer,
Calgary Economic Development*

IMPACT OF COVID-19

The global COVID-19 pandemic has significantly impacted the economy for Canada, Alberta, and Calgary – including the outlook for digital transformation (DX). The McKinsey Institute first articulated the much-repeated phrase “the recovery will be digital” about the potential for a rapid migration to digitization by companies emerging from the COVID-initiated recession.

International Data Corporation (IDC) Canada recently said: “The Canadian spending on digital transformation (DX) is forecasted to reach \$28 billion in 2020 with a growth rate of seven per cent according to the new IDC Worldwide Digital Transformation Spending Guide, despite the challenges presented by the COVID-19 pandemic. However, the growth is notably slower than 2019, due to the impacts of the pandemic, but expected to recover quickly in the following years (2021 to 2023) with a five-year compound annual growth rate (CAGR) of 13 per cent.”

We expect Alberta and Calgary would experience the same quick uptick as projected nationally. During COVID-19, companies in Alberta and Calgary have continued to adapt to or drive disruptive changes to best serve their customers and markets. These companies have developed and adopted new digital competencies into their business models, products, and services to maintain operational efficiencies and organizational performance.

While the numbers presented in this report are subject to fluctuation, IDC indicates to us that the impact from COVID-19 on Canadian DX spending differs across industries; with personal and consumer services, wholesale, resource industries and retail suffering the greatest declines in growth rates.”

Calgary Economic Development will be undertaking an update of the Alberta and Calgary DX spending forecast with IDC Canada early in 2021.

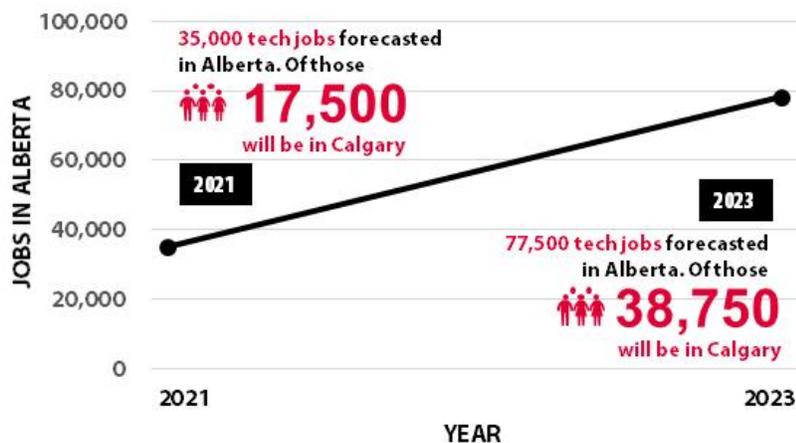
EXECUTIVE SUMMARY

IDC Canada forecasts an estimated \$7.5 billion will be spent in the city through 2022 with Calgary companies leading the \$18.4 billion forecast to be spent in Alberta. Spending on technologies and services will enable digital transformation of business practices, products, and organizations across all industries.

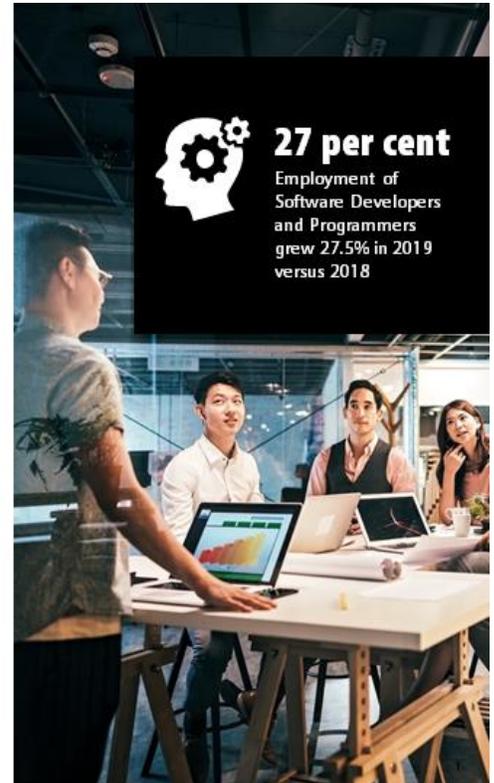
Figure 1: Calgary companies lead DX spend in Alberta

TECHNOLOGY

DEMAND FORECAST IN CALGARY



Source: ICTC



Digital transformation provides Calgary industries with unparalleled opportunities for value creation. It is becoming the largest driver of new solutions and technology investments among Calgary businesses.

Investments in digital transformation in Calgary:

\$7.5 Billion

Projected spending on digital transformation by 2022¹

20%

Predicted increase on digital spend through 2022²

The three industries in Calgary that will invest the most in digital transformation from 2019 to 2022 are: Energy (\$1.9 billion), creative industries (\$1 billion), and life sciences (\$627 million).

DX technology investment growth is forecast to range between 16 per cent and 23 per cent across all sectors in Calgary. Agribusiness and manufacturing are the most rapid adopters, each with a compound annual growth rate (CAGR) of 23 per cent from 2019 through 2022.

¹ Total for 2019 to 2022 as calculated by IDC Canada

² Compound annual growth rate for 2019 to 2022 as calculated by IDC Canada

ONWARD AND UPWARD

The digital revolution is transforming traditional industries and creating new ones. Mobile, cloud computing, artificial intelligence (AI), sensors and data analytics are among the most important drivers of this change. With declining costs to adoption, more businesses worldwide are utilizing these technologies to increase productivity, lower barriers to entry, and become more connected. In the big data and business analytics space alone, worldwide revenues are predicted to grow from \$120.1 billion US in 2016 to more than \$203 billion in 2020.³

Figure 2: Industry digital transformation initiatives use cases

Digital Transformation (DX) Across Industries

Artificial Intelligence		Internet of Things		Machine Learning		Blockchain		AR/VR	
Agribusiness	Creative Industries	Energy	Financial Services	Life Sciences	Logistics	Manufacturing			
Agtech	Film & TV	Digital twin	Fintech	Biotechnology	Intelligent transportation	Material optimization			
Precision agriculture	Digital animation	Remote monitoring	Cyber security	Genomics	Fleet optimization	Asset tracking			
Crop science	Music	Cleantech	Digital banking	Medical devices	Digital supply chain and logistics automation	Next-generation customer care			
Animal genetics	Calgary Film Centre	Autonomous vehicles	Identity management	Imaging	Robotics and manufacturing	Autonomic operations			
Livestock monitoring	Digital media	Energy storage solutions	Process optimization	Health tech	Aerospace, defense and autonomous systems	Channel management			
	Gaming	Electrification		Wearable technology		Connected services			

Canada’s digital economy is expanding rapidly as part of a global movement. In 2019, Statistics Canada released research that placed the value of the Canadian digital economy in 2017 at \$109.7 billion – larger than mining, quarrying, and oil and gas.⁴

³ Forbes, 6 Predictions For The \$203 Billion Big Data Analytics Market (January 2017) <https://www.forbes.com/sites/gilpress/2017/01/20/6-predictions-for-the-203-billion-big-data-analytics-market/#19f123232083>

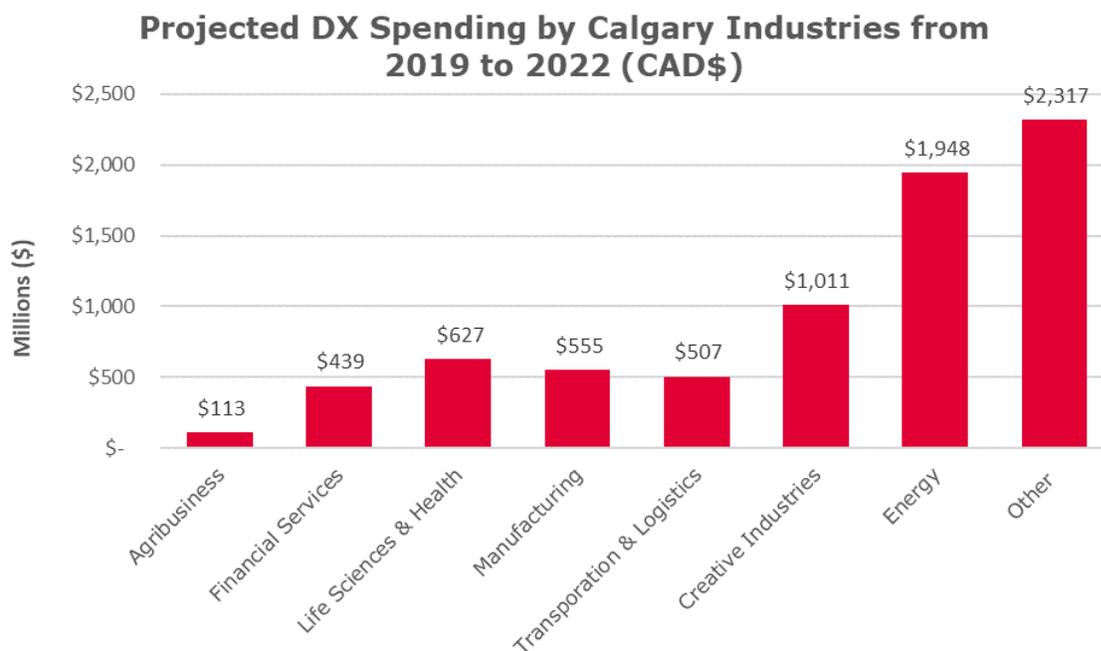
⁴ Based on 2015 data

The digital economy has driven job growth by 37 per cent between 2010 to 2017, significantly higher in comparison to the economy-wide average of 8.6 per cent in the same period. Analysis by IMD found Canada ranked 8th globally in total digital competitiveness based on knowledge, technology, and readiness.⁵

Calgary businesses are forward thinking, with many employing hardware, software, and services technologies to structure their operations for the future. Calgary’s digital transformation spend is projected to grow by a compound annual rate of 20 per cent between 2019 to 2022.

The combined effects of the projected \$7.5 billion investments in these technologies in Calgary is accelerating digital transformation exponentially. Figure 3 shows the projected DX spend by Calgary industries between 2019 and 2022.

Figure 3: Projected DX spend by Calgary industries from 2019 to 2022



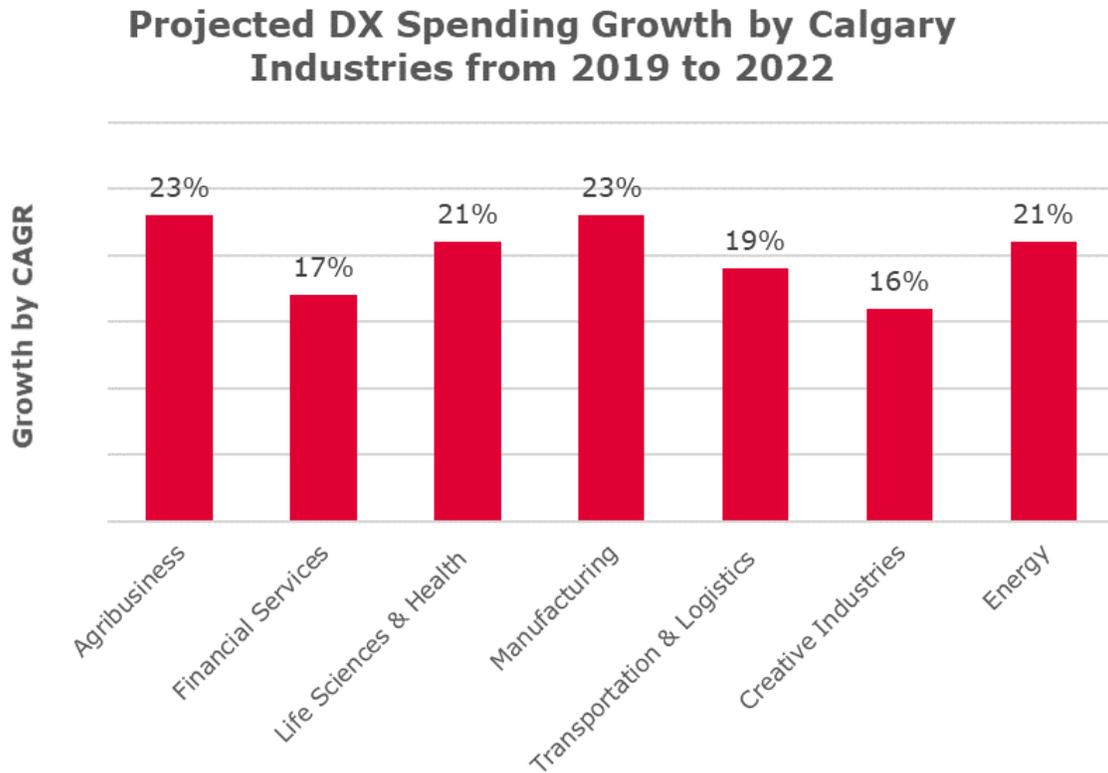
Source: Calgary Economic Development (2019)

Figure 4 shows strong DX technology investment growth is forecast across all industries in Calgary, with a compound annual growth rate (CAGR) ranging between 16 per cent and 23 per cent. The industries projected to spend the most on DX between 2019 to 2022 are the

⁵ The Real Economy: Current Canadian Economic Conditions, Volume 2:
https://rsmcanada.com/content/dam/mcgladrey/en_CA/pdf_download/real-economy/canada_the-real-economy_q2-19.pdf

agribusiness and manufacturing sectors, each with a CAGR of 23 per cent, and the energy sector with a CAGR of 21 per cent.

Figure 4: Projected DX spending growth by Calgary industries from 2019 to 2022



Source: Calgary Economic Development (2019)

By embracing innovation and technology, Calgary is also diversifying into high-growth sectors. Out of all investment committed to digital transformation, 75 per cent of spending will occur outside of the energy sector.

DIGITAL TRANSFORMATION: VALUE FOR INDUSTRY AND ECONOMY

How will Calgary companies deliver \$7.5 billion of combined value, maximizing benefits for both industry and economy?

Digital transformation is among the most important strategic priorities for Calgary enterprises across all industries. Calgary companies have developed a focus on business resilience using digital transformation employing a range of technologies including robotics, information extraction, image recognition and machine learning. Below are examples of digital use cases from Calgary companies who are realizing business benefits from the adoption of digital solutions.

AGRIBUSINESS

\$113 Million	•Projected spending on digital transformation on Agribusiness by 2022
1.5%	•Share of total industry digital transformation in Calgary
23%	•Predicted increase on digital spend in Agribusiness by 2022

With forecasts estimating the world's population will approach 10 billion by 2050, the agribusiness sector needs to simultaneously meet global demand for better quality and higher volumes of food while minimizing environmental impact. Digital communication networks, Unmanned Aircraft Systems (UAS), and robotics add value to the industry by enabling better-informed decisions, higher yields and increased sustainability resulting in better returns for farmers.



CASE STUDY

Nutrien has rolled out the user-friendly Nutrien Ag Solutions portal to provide customers with industry data and analytics. The platform has been recognized for its role in advancing sustainable agriculture through account management, providing weather data and interpretation, as well as commodities data. In 2019 and beyond, Nutrien will continue to build on this strength by introducing an e-commerce functionality that will allow customers to place online orders for crop protection plans and tailored agronomic insights.

CREATIVE INDUSTRIES

\$1 Billion	• Projected spending on digital transformation in Creative Industries by 2022
14%	• Share of total industry digital transformation in Calgary
16%	• Predicted increase on digital spend in Creative Industries by 2022

For creative industries, digital transformation has long driven their processes from ideation through production, marketing and distribution. Developments in artificial intelligence create new value chains in targeted marketing, user experience and visual content.



CASE STUDY

Offering a full range of creative services, Full Blast Creative is proactively adopting software and hardware solutions such as drone imaging and artificial intelligence analytics to bring value to their clients. Their expertise in implementing and leveraging social media analytics tools have helped devise fulsome strategies for clients looking to launch their businesses into the digital age.

ENERGY

\$1.9 Billion	• Projected spending on digital transformation in Energy by 2022
26%	• Share of total industry digital transformation in Calgary
20%	• Predicted increase on digital spend in Energy by 2022

The energy sector is on the cusp of massive disruption in the face of evolving customer demands, regulatory policies and climate change. Calgary's energy companies are using the integration of information technologies and operational technologies, drones, Internet of Things (IoT), sensors, data analytics software, augmented reality (AR), virtual reality (VR) and autonomous vehicles (AV) to improve the safety, sustainability, productivity and reliability of their operations.



CASE STUDY

In 2018, \$635 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

FINANCIAL SERVICES

\$439 Million	•Projected spending on digital transformation in Financial Services by 2022
6%	•Share of total industry digital transformation in Calgary
17%	•Predicted increase on digital spend in Financial Services by 2022

From banking to asset management, the question of digital transformation in the financial services sector has become more about how and where, instead of when. Digital transformation spending in the industry has shown significant ability to improve customer experience, portfolio management and anti-fraud measures.



CASE STUDY

Between 2019 to 2020, ATB Financial will dedicate \$101 million dollars into technology enablement. The [Onboarding Express](#) app has allowed customers to open a new retail banking account in under 10 minutes. In AI, the EVA (Easy Voice Automation) software was leveraged to process simple customer requests in just 2 minutes, reducing turnaround times by 99 per cent. The company has also formally launched their digital-only banking platform, [Brightside](#).

"As a catalyst to drive growth and innovation in Alberta, we continue to invest in digital platforms, cloud computing and artificial intelligence—all helping ATB not only keep pace with disruption, but in some cases lead the way. These investments also help us better serve our customers by freeing up our team members' time to focus more on listening and responding to the needs of Albertans."

- Curtis Stange, CEO

LIFE SCIENCES AND HEALTHCARE

\$627 Million

• Projected spending on digital transformation in Life Sciences & Health by 2022

8%

• Share of total industry digital transformation in Calgary

21%

• Predicted increase on digital spend in Life Sciences & Health by 2022

As global populations age and expand, continued improvements in care delivery and development will need to be aided by digital technologies. In life sciences, technologies such as data-management software, advanced analytics and robotics have brought advancements in precision medicine and the development of novel therapeutics.



CASE STUDY

Building on Alberta's reputation as a national leader in fully-integrated health systems, Alberta Health Services (AHS) hopes to fully deploy their [ConnectCare](#) IT platform in the next 3 to 5 years. The software will standardize access to patient information across all Alberta hospitals and can be used by both healthcare providers and patients. Patients will benefit from transparent and secure online access to their personal health information, and care providers will be able to make the best possible recommendations with a central resource for patient information.

MANUFACTURING

\$555 Million	• Projected spending on digital transformation in Manufacturing by 2022
7%	• Share of total industry digital transformation in Calgary
23%	• Predicted increase on digital spend in Manufacturing by 2022

Comprising of discrete and process manufacturing, the top digital transformation spending priority for this industry is smart manufacturing, supported by significant investments in autonomic operations, manufacturing operations, and quality assurance.



CASE STUDY

As demand increases from consumers for supply chain transparency, Alberta-based companies Hamill Farms, Canada Malting Co., Red Shed Malting, and Last Best Brewing & Distilling teamed up with technology company TE-FOOD to increase transparency from field to can. The “Block Chain” beer features a QR code on the label, which users can scan with their phone to view details about the product and its origins, including videos, photos, maps, data, timestamps, and more to capture the journey from location to location.

"Block chain technology allows drinkers to trace their beer all the way back to the farm...With brewery supply chains becoming more complex, it's fantastic to work with local farmers and see exactly where the barley in our beer comes from."

- Phil Brian, Director of Brewing, Last Best Brewing & Distilling

TRANSPORTATION AND LOGISTICS

\$507 Million	•Projected spending on digital transformation in Transportation & Logistics by 2022
7%	•Share of total industry digital transformation in Calgary
19%	•Predicted increase on digital spend in Transportation & Logistics by 2022

Beyond communications technologies in the workplace, digitalization has become a driver of new business practices for the transportation and logistics industry. Companies in the space have employed technologies such as warehouse robotics, autonomous road transportation and virtual logistics to keep ahead of market trends.



A T T A B O T I C S

CASE STUDY

Calgary startup Attabotics has created automated vertical systems for storing, retrieving and sorting goods that can help ecommerce retailers save warehouse space by 85%. Their proprietary technology is a leader in the growing field of automation technology in traditional distribution networks, which seeks to increase productivity, streamline business processes, and reduce capital costs.



CASE STUDY

In 2018, WestJet introduced an AI-powered Facebook Messenger chatbot, [Juliet](#), to boost their customer service capabilities. Juliet utilizes machine learning technology and accumulates knowledge with every guest interaction to provide even more accurate responses over time. Not only will this functionality alleviate stress for clients undergoing travel and requiring immediate assistance, it will also provide travel inspiration and recommend destinations based on clients' individualized interests and vacation style.

"Juliet is the first of many ways WestJet will be raising the bar using digital to improve the guest experience, and make the travel journey easier and more enjoyable... Launching Juliet gives even more access to quick, simple support on a platform that a majority of our guests already have at hand."

- Alfredo C. Tan, Chief Digital & Innovation Officer, WestJet

BUSINESSES ACCELERATING DIGITAL GROWTH

To respond to the growing opportunities in digital transformation, Calgary’s innovators have built a robust ecosystem of B2B businesses and support organizations to help companies realize the benefits of new technologies. Operating across industries, hardware, software and services, the possibilities for added value are endless.



[Amii](#) is an Alberta-based research institute that advances research within machine intelligence. The Amii Innovates program guides businesses on the path to machine intelligence adoption, including the development of in-house knowledge, strategies to shift processes and systems, and team building.



[Attabotics](#) provides 3D robotic goods-to-person storage, retrieval and real-time order fulfillment for manufacturers and distributors. By using high-density storage, business processes can be streamlined while expanding capacity.



[Chata.ai](#) is a conversational business intelligence tool using artificial intelligence to provide automated answers to customers’ questions and perform data analysis in real time. In financial services, integrations with QuickBooks, Xero, Sage Business Cloud Accounting and CSV enables efficient and user-friendly data insights.



[Hexagon](#) is a global leader in sensor, software and autonomous solutions that is putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.



[RS Energy Group](#) is a leading software as a service (SaaS) firm delivering data-driven intelligence for the energy industry. Applications range from operations, servicing and investing.



Recognized as a 2018 Top 100 solution provider in Canada for four consecutive years, [SysGen Solutions Group](#) provides IT solutions to support businesses in all industries.



White Whale is leveraging their flagship solution, DeepSea, to help businesses across industries make sound, data-driven decisions. In aviation, insights can be used to diagnose and predict maintenance events.



4Rev provides clients with a proven strategy development framework to guide them through their digital transformation journey. They work with clients to examine their business from every angle, enabling them to identify and build on core strengths to develop a culture of continuous improvement and innovation.

NEXT STEPS

The landscape has changed. Organizations are embracing digital transformation and recognize the new bar for resiliency requires a focus on delivery, developing deeper competitive insights to inform decision-making, and acknowledging that things are changing faster than before.⁶

As with many cities, Calgary's economy is at a crossroads and businesses must continue to invest in, develop and adopt disruptive emerging technologies as the new way of doing business.

The case studies of digital transformation demonstrate that Calgary companies in all sectors are adopting transformative technologies to stay competitive and become leading players in their industries. Embracing this opportunity will allow Calgary businesses to be disruptors rather than be disrupted and contribute to the city's vibrancy for the foreseeable future.

The City of Calgary has a plan to ensure continued growth and prosperity in a time when new technologies will continually disrupt everything from the way we conduct business to how we live our lives.

The economic strategy, *Calgary in the New Economy*, was approved by City Council in 2018 and is committed to advancing Calgary's core industries by accelerating the development and adoption of disruptive technologies in these sectors.

This will be achieved by executing on four focus areas:

- 1. Talent:** Recruit, retain and retrain the tech and business talent needed by companies developing disruptive technologies.
- 2. Place:** Be Canada's most livable and vibrant city that is a destination for top talent globally.
- 3. Business environment:** Become Canada's most business-friendly city by making Calgary a living lab for innovation of all kinds.
- 4. Innovation:** Become Canada's leading B2B innovation ecosystem.

To achieve the innovation goal, four initiatives have been identified:

1. Create the Calgary Innovation Corridor to be a central point of contact to build productive relationships among startups, scaleups, corporations, investors and customers.
2. Build funding to support generational growth through new funding mechanisms for startups and scaleups and facilitate local and global capital to drive new venture development and growth.
3. Develop relationships within the ecosystem by curating and cultivating relationships between academia, enterprise, service agencies and investors.

⁶ Company report shared with Calgary Economic Development. Created by Doug Junor, Managing Director, 4Rev. Every Job Is a Digital Job, but Not Everyone Needs to Learn Code. (2019)

4. Accelerate growth by attracting investment/companies to fill gaps in our innovation ecosystem, advocate for government support of startups and help Calgary's tech companies expand to global markets.

Calgary Economic Development works with stakeholders from industry, government, post-secondary institutions and community partners to develop and execute the policies, programs and projects to accelerate development and adoption of disruptive technologies that will position Calgary as a leader in the new economy.

METHODOLOGY

Digital transformation custom forecast methodology outline:

IDC uses primary and secondary sources for sizing and forecasting markets including interviews with IT vendors, public financial records, historic market data and user surveys.

The base data on Canadian Digital Transformation spend by IDC Canada was estimated by the 2018H1 edition of the **Worldwide Digital Transformation Spending Guide**.

Alberta Digital Transformation Data: Canadian digital transformation was further segmented to the provincial level using the Canadian IT Market Forecaster.

Calgary Digital Transformation Data: Further segmentation to the Calgary level was achieved using Statistics Canada Business Counts. This considered two factors in Calgary versus the rest of Alberta:

- Proportion of establishment counts
- Proportion of number of employees

IDC industries were mapped to Calgary Economic Development industries using North American Industry Classification Standard (NAICS) mapping. These industries provided an annual forecast of DX technology spending, at the level of hardware, software and services from 2017 to 2022. The digital transformation case studies in this report were developed by Calgary Economic Development and do not directly align to IDC's published digital transformation use cases by industry.

For their valuable insight into Calgary's digital transformation landscape. The information we collected provided a solid foundation for this paper and identified goal posts for progress.

We wish to thank:

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Alberta Health Services

Attabotics

ATB Financial

Canada Malting Co.

Chata

Full Blast Creative

Hexagon

Nutrien

RS Energy Group

Suncor

SysGen Solutions Group

WestJet

White Whale Analytics