



Ingenium

Canada's Museums of Science and Innovation
Musées des sciences et de l'innovation du Canada

Summary of the
CORPORATE PLAN
2018–2019 to 2022–2023

Summary of Operating
and Capital Budgets
2018–2019

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EXECUTIVE SUMMARY

Ingenium – Canada’s Museums of Science and Innovation (Ingenium or the Corporation) is mandated by the *Museums Act* to preserve Canada’s scientific and technological heritage, and to promote, celebrate, and share knowledge of that heritage with Canadians. An arm’s length cultural Crown corporation, Ingenium is proud to operate three museums: the Canada Science and Technology Museum (CSTM) the Canada Aviation and Space Museum (CASM) and the Canada Agriculture and Food Museum (CAFM) (“the museums”).

Over 2018-2019, Ingenium will continue to build on the successes of its travelling exhibitions, digital offerings, national initiatives and programs, to deepen its reach, connection and engagement with Canadians and citizens around the globe as it becomes a communications platform for science and technology. Ingenium will continue to use digital technologies and platforms, such as 3D scans, mobile apps and games, virtual exhibits, open data and open heritage, to redefine museum access in the digital era. Ingenium will grow its brand of participatory heritage both nationally and internationally to promote Canada’s science and technology innovation culture. By fostering collaborations and contributions from citizens, governments, industry, heritage organisations, research and educational institutions across Canada and abroad, Ingenium will continue to support the creation of diverse cultural heritage content that enriches the public sphere. The museums will continue to offer unique experiences and enriching learning opportunities whereby Canada’s scientific and technological past can inspire innovations of the future.

Strategic Objectives

As 2018-2019 represents year four of the 2015-2016 to 2019-2020 strategic plan, Ingenium will move to the implementation or completion of several activities identified at the start of the plan, in order to progress on the strategies that support the achievement of outcomes. Over 2018-2019, Ingenium will focus on three priorities namely, Digital Citizenship, Innovation and Growth, and Branding and Global Reach, among the activities it will pursue in support of its strategic objectives, as follows:

Best in Class – Collection

- continue to prepare the collection for the move to the Collections Conservation Centre (C3);
- conduct virtual collection tours;
- implement the research strategy;
- consult on plans for a new research institute;
- develop an Indigenous engagement framework; and
- use the collection to attract national and international researchers and collaborators.

Best in Class – Education and Exhibitions

- develop a long-term plan for renewing exhibition spaces at the museums;
- host special exhibitions at the CASM and CSTM;
- develop new collaborations with academia, industry and government to showcase innovations at the museums;
- implement a plan to support women in science, technology, engineering and math (STEM);
- promote innovation awards; and
- grow the Innovate150 platform within the new Ingenium Channel.

National and Global Outreach

- launch and market new travelling exhibitions and redevelop existing ones through collaborations and sponsorships;
- release documentary on CSTM renewal and develop other video content;
- expand and enrich outreach networks and host international conferences;
- implement the new global outreach strategy; and
- rebrand open content and public offerings under Ingenium.

Sustainable and Profitable

- implement new rental marketing and sales strategy;
- expand new enterprise management system for exhibition content;
- continue to actively contribute to open platforms;
- develop collaborations and sponsorships for the Ingenium Digital Innovation Lab;
- foster a diverse workforce with new initiatives to promote diversity; and
- implement succession plans, business plans, HR plans.

Renewed and Innovative Infrastructure

- complete the construction and fit-up of the Collections Conservation Centre (C3);
- prepare a business case and funding proposal for CSTM site and park redevelopment;
- study the feasibility of a capital campaign for the Food Innovation Centre at CAFM;
- strengthen the business case for a new conservation hangar at CASM; and
- complete health and safety projects identified for funding through Budget 2016.

Funding and Operating and Capital budgets

In 2018–2019, Ingenium will receive operating and capital appropriations totalling \$30.158 million from the Government of Canada, which includes base appropriations of \$27.308 million and \$2.85 million in temporary funding to complete repairs of its facilities to address health and safety concerns.

The total operating budget for 2018-2019 will be \$39.072 million on a cash basis, which includes \$26.508 million in base operating appropriations; \$3.112 million in deferred appropriations; and projected revenues of \$9.452 million from admissions, memberships and programming, commercial operations, and sponsorships and contributions. The majority of Ingenium's spending will be on salaries and operating facilities, with a focus on carrying out the activities listed under the strategic objectives above.

The total 2018-2019 capital budget of \$83.65 million will be used for the construction of the Collections Conservation Centre; other recapitalisation projects; and undertake cyclical repairs and maintenance and investments in facilities and corporate assets. The capital budget will be funded with base appropriations of \$0.8 million; temporary capital appropriations of \$2.85 million for health and safety projects; and \$80 million from deferred appropriations received for the Collections Conservation Centre project.

Ingenium expects to maintain balanced budgets over the five-year planning period, with the exception of 2019-2020, in order to invest in the completion of the Collections Conservation Centre, which will be covered by its equity. The Corporation continues to grapple with operating and capital budget pressures that affect its long-term sustainability.

1.0 MANDATE

Ingenium – Canada’s Museums of Science and Innovation¹ (Ingenium or the Corporation) was established as an autonomous Crown corporation on July 1, 1990, with the passage of the *Museums Act*. The *Museums Act* sets out the public policy role for all the national museums, as well as the individual mandate for Ingenium (see below). As a cultural Crown corporation, Ingenium operates at arm’s length from government with regard to operating and programming decisions. Ingenium proudly operates three national museums in the execution of its mandate, the Canada Science and Technology Museum (CSTM), the Canada Aviation and Space Museum (CASM) and the Canada Agriculture and Food Museum (CAFM), (collectively referred to as “the museums”).²

Under the *Museums Act*, Ingenium is a distinct legal entity, wholly owned by the Government of Canada. Ingenium is subject to the financial provisions governing Crown corporations set out in Part X of the *Financial Administration Act*, and is required to comply with a range of other statutes, including those governing official languages, employment equity, multiculturalism, and access to information and privacy.

PUBLIC POLICY ROLE

“plays an essential role, individually and together with other Museums and like institutions, in preserving and promoting the heritage of Canada and all its peoples throughout Canada and abroad, and in contributing to the collective memory and sense of identity of all Canadians;” and
“is a source of inspiration, research, learning and entertainment that belongs to all Canadians and provides, in both official languages, a service that is essential to Canadian culture and available to all.”

MANDATE

“To foster scientific and technological literacy throughout Canada by establishing, maintaining, and developing a collection of scientific and technological objects, with special but not exclusive reference to Canada, and by demonstrating the products and processes of science and technology and their economic, social and cultural relationships with society.”

MISSION

To collect, explore, and engage through science, technology, and engineering.

VISION

To inspire Canadians to celebrate and engage with their scientific, technological and innovative past, present and future.

VALUES

Accountability — Collaboration — Creativity — Integrity — Pride — Respect

¹ The legal name for Ingenium is the National Museum of Science and Technology. The corporate name Ingenium – Canada’s Museums of Science and Innovation is used except when the legal name is required.

² These are the museum names that appear in the *Registry of Applied Titles* (www.tbs-sct.gc.ca/fip-pcim/reg-eng.asp). The legal name of Ingenium is the National Museum of Science and Technology; the legal name of the CASM is the National Aviation Museum; the legal name for the CAFM is the Canada Agriculture Museum. The use of “Ingenium” refers to the governing body of the museums. The use of “the museums” is not meant to imply that the museums are separate legal entities.

2.0 ORGANISATIONAL PROFILE

2.1 Museums and the Collection

Ingenium's three museums and collection are housed in 19 buildings in three locations throughout Ottawa. The newly renovated and reopened Canada Science and Technology Museum, is located on St. Laurent Boulevard. Adjacent to the Canada Science and Technology Museum, a new purpose-built Collections Conservation Centre will open in 2019 to house the corporate offices as well as the national collections. The Canada Aviation and Space Museum and Hangar are at the Rockcliffe Airport and the Canada Agriculture and Food Museum is located at the Central Experimental Farm. All three sites have space for exhibitions, programming, facility rentals and offices.

Canada Science and Technology Museum

The Canada Science and Technology Museum is Canada's only comprehensive science and technology museum. It offers dynamic exhibitions and interactive programming as a nexus of knowledge on Canadian science and technology that is shared with Canadians through travelling exhibitions, an extensive website, and an active artifact loan program. It was the first museum in Canada to engage audiences through interactive exhibitions in the area of science and technology.

The Museum celebrated 50 years in 2017 with a grand re-opening following a major remediation and infrastructure modernization project that took three years to complete. With 7,400 m² of renewed exhibition space and over 3,000 artifacts on display, visitors can engage with 11 new permanent exhibitions, including Artifact Alley, Zoom Gallery, From Earth to Us, Into the Great Outdoors, Steam: A World in Motion, Sound by Design, Wearable Tech, Technology in Our Lives, Medical Sensations, Hidden Worlds and the Crazy Kitchen. Research based on the national collection resulted in accurate and relevant stories told in compelling ways to engage visitors and pique their curiosity. New educational programs, hand's-on interactives, augmented reality experiences, a studio, demo stage, temporary exhibit hall, and mobile apps have been introduced to further enrich the visitor's experience and to promote STEAM education.

Canada Agriculture and Food Museum

The Canada Agriculture and Food Museum aims to inspire visitors, both on site and virtually, to explore the value, contribution and necessity of agriculture to Canadians' quality of life—food, fibres, energy and industry depend on it. The CAFM offers a unique experience: a demonstration working farm combined with museum exhibitions and interpretation. Located in the heart of the nation's capital on the Central Experimental Farm National Historic Site, the museum is a showcase for Canadian agriculture, food production and the science and technology that feeds, clothes and powers the nation.

The CAFM offers programs, special events and exhibitions which explore Canada's proud agricultural heritage, as well as the contemporary benefits and relationships between agriculture and Canadians' everyday lives with a strong focus on food literacy. This theme, relevant to audiences of every age, background and gender, will enable the museum to grow its collaborations and relationships with organizations in the health, food safety, environment education, and culture sectors.

Canada Aviation and Space Museum

The Canada Aviation and Space Museum's vision is to invite Canadians to explore the wonders of flight and the contribution of aviation to the transformation and development of Canada. To realize this vision, the CASM continues to collect, preserve, depict and display aeronautical and space artifacts and interpret

their significance—scientific and technical, social and cultural, historic and contemporary. It tells the stories of the women and men who followed their dreams and provides a venue for the next trail blazers to share their exploits and explorations.

The CASM offers programming that brings aerospace and aviation history to life and stimulates a lasting interest in the fascinating worlds of flight and space exploration. On-site or online, visitors learn about the significant contributions Canadians have made to aviation and space flight to the present day. The CASM is currently focused on the development of its space mandate to become the nexus of space programming, visibility and collaboration for players in the space ecosystem. The CASM aims to be a source of inspiration, both on site and virtually, for Canada's youth, through the presentation and interpretation of innovative discoveries and new horizons in aerospace and aviation both in Canada and in the world.

The Collection

The collection, the most extensive research collection of scientific and technological artifacts in Canada, is particularly rich in the areas of communication, manufacturing, natural and renewable resources, scientific instrumentation and transportation. The collection of artifacts, trade literature, documents and photographs plays a central role in the museum's exhibitions and is preserved as a resource for future generations of Canadians. Each discovery, invention and innovation represented in the collection display ways in which human innovation contributed to our modern world.

The extensive aviation collection of the CASM is deemed by historians and museums alike as among the best in the world. The CASM collects artifacts illustrating the development of aviation in times of peace and war, from the earliest days of manned flight to the present, and into space. The museum highlights Canadian achievements in aerospace science and technology, complemented by aircrafts and related artifacts from many other nations, thus providing an international context.

Under construction next to the Canada Science and Technology Museum, the Collections Conservation Centre is a purpose-built facility will improve the storage conditions and allow increased access to the collection. The Centre will house hundreds of thousands of nationally significant artifacts emblematic of Canadian ingenuity, including vintage cars, locomotives, farm equipment, and ship models; cameras, televisions, and telephones; instruments, tools, and equipment from all fields of science and technology — which require specialized environments to ensure their long-term preservation. A new research institute and digital innovation lab will complement the Centre's library and archives, conservation labs, and workshops.

2.2 Governance Structure

2.2.1 Board of Trustees

The *Museums Act* provides for a Board of Trustees, consisting of up to 11 trustees (including a chair and a vice-chair), appointed by the Minister of Canadian Heritage and Multiculturalism with the approval of the Governor in Council.

(As of March 31, 2018)

Note: At the end of their term, trustees continue to serve on the Board until a replacement is named. The Chair's term has expired and the Vice-Chair's term will expire in June 2018. No replacements have been named for these two Board positions.

| Trustee | City, Province or Territory | Term dates |
|--|------------------------------------|---------------------------------------|
| Gary Polonsky, Chairperson | Courtice, ON | January 14, 2014 – January 13, 2018 |
| Jim Silye, Vice-Chairperson | Calgary, AB | June 18, 2014 – June 17, 2018 |
| David Cohen (replaced by Heather Kennedy) | Westmount, QC | June 13, 2014 – June 12, 2018 |
| C. David Desjardins | New Maryland, NB | February 5, 2015 – February 4, 2019 |
| Michael Geist | Ottawa, ON | June 1, 2018 – June 1, 2022 |
| A. Christian Idicula | Edmonton, AB | March 1, 2018 – March 1, 2022 |
| Radosveta Ilieva | St. Laurent, QC | October 27, 2017 – October 27, 2020 |
| Paul D. Johnston | Ottawa, ON | June 1, 2018 – June 1, 2022 |
| Heather Kennedy | Calgary, AB | June 13, 2018 – June 13, 2021 |
| Andréanne Leduc | Montreal, QC | October 27, 2017 – October 27, 2021 |
| E. Virginia I. McLaughlin | Vaughan, ON | February 21, 2018 – February 21, 2020 |
| Marianne Sadar | Vancouver, BC | October 27, 2017 – October 27, 2021 |

The Board serves as Ingenium’s governing body and is accountable to Parliament for the affairs of the Corporation through the Minister of Canadian Heritage and Multiculturalism. The trustees, acting collectively as the Board, are responsible for providing strategic guidance to management and to oversee the business management, activities and affairs of Ingenium, ensuring that all the duties conferred on the Corporation by the *Museums Act* and Part X of the *Financial Administration Act* are carried out.

The full Board meets between four to six times per year. The Board also engages the public on an annual basis, communicating its mandate, priorities, and financial and programming results and plans at the annual public meeting. The annual public meeting occurred on January 17, 2018.

2.2.2 Board Committees

The Board is supported by four committees: the executive committee; the governance committee; the finance, audit and risk management committee; and the major facilities committee. Committees meet on a quarterly basis and report to the Board. The Chair of the Board is a member of all committees. The President and CEO of Ingenium is a non-voting member of all committees.

Executive Committee

The executive committee establishes the annual performance objectives of the President and CEO. This committee also exercises full authority under exceptional circumstances should the full Board of Trustees be unable to meet in a timely fashion.

Finance, Audit and Risk Management Committee

The finance, audit and risk management (FARM) committee oversees Ingenium's financial management controls, its practices and its information systems. The committee reviews and advises the Board of Trustees on Ingenium's five-year operating and capital plans, as well as the annual and quarterly financial statements. In addition to providing oversight of the risk management policies and practices within Ingenium, the FARM committee also selects internal audits and reviews and advises the Board of Trustees on plans and reports from internal and external auditors.

Governance Committee

The governance committee (GC) monitors and reviews the governance of Ingenium regarding best practices for corporate governance and stewardship, and recommends appropriate changes to enhance corporate functioning and decision-making. The GC reviews the Board's committee structure and oversees the Board's annual self-evaluation process.

The GC supports the Board's succession planning by ensuring that the Board's skills matrix is regularly updated and identifying any gap in skills, experience or representation. The gaps are communicated to government in the form of a needs assessment for future appointments.

Major Facilities Committee

The major facilities committee (MFC) provides enhanced oversight of Ingenium's major infrastructure projects, as well as the long-term infrastructure plans.

2.2.3 Executive Management

Ingenium's daily operations are managed by the President and CEO, who is supported by an executive leadership team. The executive team includes the Chief Operating Officer, the Director General of each museum, the Vice President, Business Development; the Vice-President, Human Resources; the Vice-President, Public Affairs; and Vice-President, Collection, Research and Corporate Governance.

3.0 OPERATING ENVIRONMENT

3.1 Environmental Scan

Demographics and Diversity

Canada continues to grow as a diverse and vibrant nation. According to Census data from 2016, the immigrant diversity of Canada represents over 250 ethnic origins, and 21.9% of the Canadian population. Indigenous Peoples account for 4.9% of Canada's population. Since 2006, the Indigenous population has grown by 42.5%—more than four times the growth rate of the non-Indigenous population over the same period. Population projections indicate in the next two decades, the Indigenous population is likely to grow by another million, exceeding 2.5 million persons.

These demographic trends continues to enrich Canadian society and change the composition of museum visitors. Museums must examine ways that they can adjust the content of their exhibitions and programming, service delivery, and accessibility accommodation to reflect Canada's increasingly diverse population.

Ingenium will take these demographic factors into consideration in support of succession planning, employee hiring and retention as well as when renewing its facilities, developing programming, and planning other offerings in order to be more inclusive of all visitors.

Tourism

Tourism is one of Canada's most important industries, which generates business in every community, province and territory of Canada. Situated in Canada's Capital Region, Ingenium has a unique opportunity to welcome tourists to its museums.

Ingenium's revenues are highly dependent on attendance, which is directly influenced by Canadian and global economies as well as the travel and tourism market. A healthy economy directly impacts spending on travel and tourism within Canada.

In 2016, Canada welcomed nearly 20 million travellers across the country, the highest number since 2002. International arrivals grew by 16% since 2002. Ottawa saw a 5% increase in tourism in the Region in 2017 compared to 2016, attributed to celebrations for Canada's 150th anniversary of Confederation. Tourism experts anticipate that 2018 will also a good year for tourism in the region, rolling over from 2017.

Digital Environment

The expansion of digital technologies has encouraged many citizens to become more engaged as cultural content consumers and creators. This shift presents many opportunities for Canadian cultural institutions, particularly museums, to extend their reach, and share their collections, exhibitions and research content to millions of people both within and beyond the museum and even the country's borders.

Whether through an online database, blogs, virtual exhibits and tours, mobile apps, open data, social media, crowdsourcing, live streaming, videos, video conferencing, virtual (VR) and augmented reality (AR) applications, and artificial intelligence (AI) applications there are an abundance of current and emerging technologies that can help Ingenium reach, connect and engage with domestic and international audiences and make our digital content immersive as well as easy to find and use. Ingenium has been collaborating and investing in technology development with various partners to create cultural

experiences using AR and VR to enhance the static content on the museum floor. Ingenium's online presence has grown dramatically, with Open Heritage, Open Data, Collection Catalogue, Innovation150 platform, and the new Ingenium Channel, a digital hub featuring curated content related to science, technology and innovation. Ingenium is well positioned and will continue to monitor opportunities and trends in digital education and distance learning as a means to engage a geographically expansive and diverse national audience.

STEM

Technological changes are impacting the world of work, and global challenges like climate change, are demanding even more people trained in STEM (science, technology, engineering and mathematics)-fields (Let's Talk Science, 2017). Currently, Canada has a proportionately low levels of girls, newcomers, indigenous and low-income youth pursuing these subjects in post-secondary education. Just 29.6% of individuals with a postsecondary education in STEM are women. Increasing the STEM participation of under-represented populations, including women and Indigenous peoples, is important for diversifying the supply of STEM-skilled individuals.

3.1.1 Supporting Government Priorities

Ingenium is a member of the Canadian Heritage Portfolio and contributes to the achievement of the government-wide outcome: A vibrant Canadian culture and heritage. It does so through its efforts to preserve, interpret and promote Canada's scientific and technological heritage for present and generations to come. The three museums give Canadians of all ages the opportunity to engage with science and innovations from Canada's past, with developments from today and visions of tomorrow. Ingenium aims to inspire Indigenous peoples, youth, and women to explore careers in science, technology, engineering, and mathematics, which are sectors vital to Canada's future economic prosperity.

Through its exhibitions, program content, research, and collections, Ingenium delivers its mandate and activities aligned with a myriad of other government priorities: innovation and skills development, diversity and inclusiveness (including Indigenous peoples), accessibility, environmental themes, support for Canada's creative industries, and open and transparent government.

3.2 Risks and Mitigation Strategies

In 2017-2018, Ingenium developed a new integrated risk management framework to establish a model for incorporating risk information in strategic decision-making. This framework will guide Ingenium's risk management process and to understand, assess and manage the organizational-level risks to its five strategic objectives. The framework also supports a continuous improvement of risk practices.

The following three key corporate-level risks facing Ingenium's ability to achieve its strategic objectives remain the most prominent in terms of impact and/or likelihood:

Risk 1: *Cost overruns for the Collections Conservation Centre construction project and the ability to successfully complete the project with proper building and site functionality.*

Due to operating funding pressures and limited base capital appropriations, Ingenium would not be able to absorb any cost overruns for the major capital project without negatively impacting the operations at the museums or significantly jeopardizing the Corporation's overall financial health. The complexities around the construction of a specialized conservation building with laboratories, coupled with the ambitious timeline, add to the typical complexities associated with major infrastructure projects.

Mitigation: Ingenium has put in place a highly qualified team of construction, engineering, and architectural professionals to deliver the Collections Conservation Centre project. A specialized project manager oversees the team to ensure rigorous adherence to the schedule and budget. The project team regularly evaluates value engineering opportunities at every step of the project development, including scope definition, fit-up and finishing, in order to use the funding most effectively. The Board of Trustees major facilities committee receives regular progress updates on the schedule and budget of the project, providing an additional layer of oversight.

Risk 2: *The potential loss of relevance and momentum due to a limited capacity to invest in new initiatives, programming and exhibitions on multiple platforms.*

Ingenium's appropriations are not indexed to protect it against the impact of inflation and market forces on goods and services, utilities, property taxes and other non-discretionary costs. It continues to use an increasing portion of its operating funding to operate its 19 facilities as well as fund the salary envelope. These financial considerations impact Ingenium's ability to fund digital, exhibition and programming initiatives and build on successes it has had through collaborative agreements to create and disseminate content.

Mitigation: Ingenium continues to pursue financial sustainability by finding efficiencies and savings, diverse revenue generating opportunities and contributions and sponsorships. Ingenium is also seeking to collaborate with other institutions to share resources to help attain program objectives. Ingenium also seeks to maximize outreach through digital means in order to reach a broader public more efficiently. The new Crown-owned C3 will eliminate lease costs, which will be put toward the operation, maintenance and recapitalization of the new Crown-owned facility.

Risk 3: *Endangering the national collection due to inappropriate storage conditions or during the move to the Collections Conservation Centre.*

Ingenium is responsible for an extensive collection of scientific and technological artifacts and materials. The collection is currently housed in three leased non-purpose-built warehouse buildings, which are at 130% capacity. Furthermore, these buildings have inadequate temperature and humidity controls, providing a challenge for preserving existing artifacts as well as acquiring new artifacts to enhance the collection. The Collections Conservation Centre will resolve storage and overcapacity issues for the collection.

During their move into the Collections Conservation Centre, artifacts may become damaged, lost or given their size and composition, they could be hazardous or cause injury to staff and contractors involved in the move. The collection move will begin in late 2018 and will be completed in 2021.

Mitigation: During the construction of the Collections Conservation Centre, the national collection will continue to be at risk. Ingenium has made repairs to the leased buildings to protect the artifacts and address health and safety issues to staff, and continues to monitor the building systems with mitigation plans in place.

In preparation for the move, Ingenium has begun implementing a variety of risk mitigation actions based on the move sequence of the artifacts. It has also strengthened its health and safety program with improved awareness, information and training for staff and volunteers.

3.3 Highlights and Challenges from 2017–2018

3.3.1 Progress and Highlights

As Ingenium reflects on the performance results of 2017–2018, it notes that progress towards achieving targets has been steady. Ingenium has exceeded visitor attendance targets at all three museums as a result of special programs, activities and events, including Canada 150 signature events and the CSTM re-opening, which are contributing to the forecasting of record-year revenues and contributions. Outreach targets were also exceeded on digital platforms both in terms of educational program downloads and virtual engagements; travelling exhibitions and national programs; and Edukit rentals by schools.

Below are key highlights and lessons learned over the last year:

Digital / Canadian Content Investments:

Ingenium has made several strategic investments in the development of digital initiatives, in particular, working with creative technology firms and academia. These investments have helped to position Ingenium as a leader in digital initiatives within the Canadian heritage institutions. Ingenium has worked with the following firms on exciting new digital experiences:

- Simwave to create a virtual reality experienced with the 6400 locomotive in the CSTM;
- SimentIT to develop marker-less 3D augmented reality app to animate artifacts in the renewed CSTM;
- CREO inc, to develop an app that will allow users to create “Artebots” (robots made from Ingenium’s artifacts); and
- SE3D interactive, to develop Canadian content-rich mobile games.

The Avro Arrow Recovery project:

The Canada Aviation and Space Museum was sought out to support OEX Recovery Group with the search-and-recovery of free-flight Avro Arrow models from the bottom of Lake Ontario. The CASM provided expertise and support through the provision of historical information, conducting interviews on the Avro Arrow program, and through promotion on social media channels. The CASM plans to highlight the Avro Arrow program in its redesigned Cold War exhibit.

Internationally Co-Curated Travelling Exhibition on Bicycles:

Ingenium worked with five leading science museums from Israel, Germany, Italy and the US, to develop an international travelling exhibition on bicycles, to develop the interactive, multi-language exhibition cost-shared among the collaborators and with sponsorships. The Bicycle Exhibition opened at the Bloomfield Science Museum Jerusalem on June 30, 2017, and has been met with great success measured by a significant increase in visitation and selling out programming. New European venues have been added for the exhibition. The exhibition will also come to Canada in 2021 and the possibility of a Canadian tour is being explored. Ingenium expanded its network of international bodies for collaborations.

Collaborations with Indigenous Peoples:

Ingenium is collaborating with indigenous organizations and individuals for co-curating stories of indigenous knowledge and scientific and technological practice in the renewed CSTM. Collaborators on Indigenous innovations featured in the Museum include:

- Makivik Corporation of Nunavik, Inuit women share their skills and stories designing, making and marketing the *amauti* baby-carrying parka.
- First Nation astronomers provide a cross-cultural interpretation of indigenous star knowledge, using an Inineu Star map.
- Huron-Wendat community, with respect to the longstanding and still-active history of manufacturing and using snowshoes.

Canada-China Joint Committee on Culture:

Ingenium has worked with the Department of Canadian Heritage on the upcoming inaugural meeting of the Canada-China Joint Committee on Culture in February 2018, including hosting the opening reception for delegates at the CSTM. Ingenium has also been asked to consult on the Minister's Cultural Trade Mission to China planned in spring 2018. Ingenium continues to work towards activating a number of items on the MOU signed with the Shanghai Science and Technology Museum in 2017 and the University of Ottawa. Ingenium continues to seek out other opportunities for expertise exchange with other institutions in China.

Global Tastes Nights:

In 2017, the Canada Agriculture and Food Museum teamed up with local restaurants and embassies to present monthly workshops where guests discovered and delighted in the tastes of international cuisine. Sold out events featured Turkey, Trinidad and Tobago, India and Ukraine. The CAFM continues to engage with embassies, restaurants and High Commissions to create and offer future global taste nights. These events reach a greater diversity of visitors to the Museum.

The Ingenium Channel:

Launched in June 2017, the Ingenium Channel provides a digital stage with a unique Canadian perspective on science and technology by engaging with subject-matter experts who strive to share knowledge with wide and varied audiences. The Ingenium Channel offers public and private organizations, as well as individuals, opportunities to become content providers to showcase the best science and technology content from Canada and around the world. This collaborative opportunity allows organizations to raise their profiles, while sharing their own stories of human ingenuity to inspire the next generation of innovators. The Ingenium channel is a very engaging way for Ingenium to share knowledge and foster collaborations. It was developed in a very short timeframe using the Agile IT project management methodology, with project delivery as an iterative cycle. Rather than using the traditional process of planning, developing, and releasing full-fledged products, which can sometimes take years, Agile allows developers to push to market quickly, without huge up-front costs. Agile played a key role in making the Innovation150.ca digital platform a success and was used for the Ingenium Channel. Ingenium will continue to generate content and foster relationships with content providers to the Channel.

Notable Acquisitions:

- Saski Kneeler Sit-Ski, Assistive Ski Device for display in The Great Outdoors Exhibition
- Rev 2X, Hockey Sledge, for display in Artifact Alley
- uGPS Rapid Mapper, Scanner and Computer, on display in The From Earth to Us Exhibition
- Gervais Snowshoe collection, on display in the Great Outdoors Exhibition
- UFM Easy Riser and a Cosmos Écho Ultralight Aircraft operated by William Lishman

Deaccessions:

The collection rationalization project is meant to ensure Ingenium cares for the best representation of the national science and technology collection. Some of the aviation engine collection was examined and duplicate items such as the Armstrong Siddley Cheetah IX Airplane engine and the Lycoming R-680 Airplane engine were deaccessioned.

3.3.2 Challenges and Lessons Learned

Ingenium also faced a few challenges in the first half of 2017–2018. Some of its targets were not met, specifically the number of school programs at CSTM, which was due to schools deciding to have students visit the Museum rather than participate in a Museum-delivered formal school program. Ingenium did not strongly pursue campaigns for other infrastructure projects at CAFM and CASM as it focused on the CSTM and the C3 projects. The key milestones for the C3 projects were further extended to adjust to developments during the tendering and early construction phase. It has learned key lessons and made adjustments in its plans to meet these challenges as follows:

CSTM Parking:

During the early re-opening days of the CSTM, parking issues were identified which were negatively impacting the visitor experience. The parking lots were full early in the morning and visitors were unable to find adequate alternate parking. The temporary construction barricades during the construction of the Collections Conservation Centre adjacent to the Museum represents a reduction of approximately 100 parking spots, compared to prior the Museum's closure. Moreover, the interface of the parking meters were reportedly difficult to use and the processing of transactions was slow.

To address the issues with the parking meters, these were replaced with meters that are simpler to use with faster transaction processing, and an additional parking meter was added. To increase parking available, permission from the National Capital Commission was sought to create a temporary parking lot on the West perimeter of the site. The addition of this temporary parking lot provides an overflow for Museum visitors until the C3 is completed, and reduce the number of cars circulating in the Museum's current parking lots trying to find parking as well as reduced the number of cars waiting to access the parking.

The creation of a temporary parking lot also addressed the health and safety concerns of the congestion of construction vehicles parked at street-side. The result of cars and trucks parking on both sides of the street, the circulation on the street often becomes restricted to a single vehicle passing at a time, and visibility for other drivers and pedestrians was compromised.

Collection Storage:

In 2017-2018, Ingenium's efforts on collection rationalization slowed as the focus of curators, conservators and artifact handlers was on preparing and treating artifacts, mount-making and installation into the renewed CSTM. Hence, Ingenium did not meet its target to clear 400 m² of space from its collection storage through collection rationalization. Starting in 2018, a renewed and enhanced focus will be placed on collection rationalization and disposal of deaccessioned objects and surplus inventory as part of the move preparations for the C3. Currently, about 14% of objects in storage are not artifacts, rather they are exhibit props or display components, spare parts and other inventory, or accession lots that have yet to be sorted and catalogued. Ingenium will give a major push to triaging and disposal over 2018-2019 to ensure that the dedicated, specialized collection space in the new C3 is reserved for the national science and technology collection.

Documentary Series:

Ingenium reviewed the documentary series plan and amended it in order to not limit it to full-feature documentaries, but also include the video content in other formats and platforms, which may be better suited to the content presented and the target audience. This broadened approach factors in the interest of potential content collaborators, independent producers and broadcasters. In November 2017, the CASM released a Second World War Legacy documentary series online. The CASM worked with Amberwood Entertainment, on a TV animated version of its children's book *The Kuujuaq Christmas Candy Drop*, which aired on the main CBC and Radio-Canada television networks in December 2017. Featuring the voices of Tantoo Cardinal and Lorne Cardinal, it tells the story of Inuk bush pilot Johnny May who has flown over Kuujuaq in the Nunavik region of Northern Quebec to drop candy, toys, and warm clothing to the children and residents each holiday season for more than 50 years. The National Research Council of Canada worked through Ingenium's network for the production of a documentary on geo surveying. Ingenium will continue to develop and share engaging video content on its platforms.

4.0 STRATEGIC OBJECTIVES

4.1 Planning Framework

Over 2018-2019, Ingenium will pursue year four of its five-year strategic framework covering the period of 2015-2016 to 2019-2020. The strategic objectives guide the Corporation's resource allocation in order to achieve program outcomes in pursuit of its mandate. The strategic outcomes demonstrate the value and results that Ingenium aims to achieve for Canadians.

Ingenium has identified strategies, priorities and activities for each strategic objective to be translated into outcomes. While most of the activities planned for 2018-2019 continue from previous years, a few have been added to reflect new opportunities and initiatives that have arisen from Ingenium's efforts. The performance measures presented will enable Ingenium to assess the degree to which its activities allow its content to reach, connect and engage citizens at home and abroad, thereby demonstrating progress toward the achievement of its outcomes.

Over 2018-2019, Ingenium will focus on three key priorities across its strategic framework, which are: Digital Citizenship; Innovation and Growth; and Global Reach. Ingenium will continue to push the boundaries of what a public institution, like a museum, can do to engage citizens in participatory heritage through new exhibits, public programs, open platforms, virtual and digital experiences.

4.3.1 Strategic Objective 1: Best in Class — Collection

To consider the national science and technology collection as "Best in Class," Ingenium has defined the outcome as a collection that is renowned as well-researched, preserved, comprehensive, rationalized and accessible virtually and physically to Canadians. Ingenium's collection is at the heart of its activities. Each artifact tells a story about how yesterday's experimentation, innovation or invention shape the present and encourage further scientific and technological advancements.

Ingenium has emerged as a leader in the heritage sector in terms of making its collection digitally available, and it will continue to investigate the use of new technologies and platforms to make the collection more accessible to researchers, students and curious citizens. In 2018-2019, Ingenium will continue to consult examples of digital technologies in the heritage context, and define its plans for the Ingenium Digital Innovation Lab in the future Collections Conservation Centre, and in this context, expand its network of culture and technology collaborators in academic, industry, government, and cultural organizations.

In 2018-2019, Ingenium will pursue the implementation of its new research strategy, to foster a strengthened research culture based on interdisciplinary approaches to the study of emerging trends in heritage preservation and interpretation. Research priorities of the strategy include: social and cultural dimensions to science and technology; contemporary science and technology; resources and environment; living systems; mobility; conservation of collections; and understanding audiences. In 2018-2019, Ingenium will advance curatorial research internally, and in collaboration with external researchers, to develop under-represented areas of the collection. It will assist with the coordination between research activities, the science communication program, exhibition plans, and public and educational programming in order to produce creative, rigorous and engaging public offerings. The strategy underpins the new research institute being created as part of the Collections Conservation Centre that will welcome research fellows, visiting scholars and guest researchers to conduct and collaborate on research.

In 2018-2019, Ingenium will pursue deeper engagement with Indigenous communities to better reflect Indigenous peoples' historical experiences and cultural perspectives in Ingenium's collection, exhibitions and programming activities. The ability to create and share knowledge about their environments, and to develop tools and techniques to thrive in them, are challenges to which Indigenous Peoples have found creative solutions. These engagement efforts will align with the Government of Canada's commitment to Indigenous languages and cultures, recommendations from the Truth and Reconciliation Commission, and the Crown's duty to consult.

In 2018-2019, Ingenium curators will support the development of an oral history project that will feature a number of interviews with Indigenous leaders and role models. Expanding curatorial focus on indigenous technology and ways of knowing presents an excellent opportunity to broaden public understanding of the diverse interconnections between science, technology, society, culture and environment as a whole.

In 2018-2019, Ingenium will continue developing the plans for moving into the new Collections Conservation Centre. Moving will be a substantial endeavour given the 85,000 3D artifacts, and nearly 2 million archival and library holdings, the specialized conservation laboratories, workshops and equipment, and administration offices that will begin moving late 2018. To ensure that internal resources can be devoted to the move without major disruptions to ongoing museum activities, Ingenium has adopted a moratorium on new acquisitions and outgoing loans during the move period, from April 2018 until 2021.

Preparations for moving the collection as well as risk mitigation actions associated with moving, are underway and will continue to be the main focus of curatorial, collection and conservation staff during the entire move period. Key activities to ensure that the condition of the collection remains undiminished through the packing, transit and rehousing processes include: fabricating customized pallets and crates; securing loose pieces; identifying and removing or containing hazards; barcoding; identifying un-tagged pieces; reuniting pieces with their primary artifact; packing artifacts in appropriate packing materials. Preparations also include increased efforts on collection rationalization informed by the Collection Development Strategy, as well as a review of other inventory found in collection storage in order to dispose of deaccessioned objects and surplus inventory and returning loans no longer on display. In 2018-19, Ingenium will strengthen its health and safety program based on the risks present in its collection, with improved awareness, information and training for staff and volunteers. In 2018, Ingenium will engage a firm specializing in heavy equipment moves to move the oversized, extra-large artifacts, and work with the Bytown Railway Society who will execute the rail move.

The new building's design provides vitrines on its façade and display cases along the interior atrium. In 2018-2019, curators will develop plans for showcasing the collection and inventory in those exterior and exterior display spaces that will be installed beginning in late 2019-2020.

| Strategies for SO 1 | 2018-2019 | 2019–2020 | 2020–2021 | 2021–2022 | 2022–2023 |
|---|--|---|--|--|---|
| Make the collection more accessible digitally and physically. | Digitize the collection (ongoing). | | | | |
| | Deliver virtual collection tours. Plan artifact placement and displays in C3. Define plans for new Ingenium Digital Innovation Lab in the C3. | Develop collection tours in new C3. Install artifact displays. Preparations and network of collaborations for new Lab | Launch tours in C3. Develop and implement plan for cyclical renewal of artifact displays (ongoing). Equip and launch new Lab | | Develop digital projects and collaborations (ongoing) |
| Become leaders in science and technology subject-based research by focusing on and sharing expertise. | Implement research strategy. Complete plans for research institute in C3. | Open the Research Institute in C3. | Review and renew research fellows program. | | Evaluate the research strategy. |
| | | Host/participate in conferences and symposia via the research institute (ongoing). | | | |
| | Use the collection and research strategy to attract national and international researchers and program collaborators (ongoing). Pursue science communications. Complete the development of the Indigenous engagement strategy. | Review the science communication program. Implement the Indigenous engagement strategy. | | Review the Indigenous engagement strategy. | |
| Advance the Collection Rationalization Project. | Address cataloguing backlog and pursue collection rationalization. Prepare for and begin collection move. | Move collection and staff into the C3. | | Vacate leased facilities. | |

Outcome for SO 1: Ingenium has a well-researched, preserved, comprehensive and rationalized collection that is accessible virtually and physically to all Canadians.

Performance indicators

Targets for 2018–2019

- Percentage of the collection digitized

- 96% of the collection digitized

- Amount of space cleared by removing un-catalogued objects or deaccessioned objects from collection storage

- 500 m²

4.3.2 Best in Class — Education and Exhibitions

To consider itself to be the “Best in Class” for education and exhibitions, Ingenium will continue to create informative, engaging, relevant and compelling physical and digital exhibitions and learning opportunities that encourage visitors to explore the products and processes derived from the diverse social, economic and cultural relationships between science, technology and modern life.

The modernized CSTM opened in November 17, 2017, to rave reviews from stakeholders, media and visitors. New public and educational programs based on these exhibitions will ramp up into 2018-2019. The CSTM architectural and design features, such as the LED screens and projectable façade, its wall mural and art installations throughout the Museum provides a backdrop for the CSTM to develop and experiment with the theme of the conjunction of art and technology over 2018-2019. The maker studio programming will be expanded to include art.

Over 2018-2019, the CASM will focus on Space-themed programming, exhibitions and activities, culminating with the launch of the space mission of Canadian astronaut David St.-Jacques in December 2018. The CASM will enhance its educational and public programs with increased content on themes of space, youth and STEAM, as well as develop school programs that will complement the space-themed temporary exhibitions. The CASM will begin planning activities to underline the International Space Station’s 20th Anniversary in 2020.

The CAFM will complete its fifth year of food-literacy focused programming in 2018-2019, as it begins plans for a five-year thematic program on food security. Over 2018-2019, the CAFM will continue to offer a variety of food-literacy programs, including its “Food For Thought” lecture series, as well as foodie events that attract a wider diversity, both cultural and demographic, of visitors. It will also offer new programming on the use of satellite technology and the science of soil in farming. Educational programming and live demonstrations to layer additional knowledge sharing and public engagement to the visitor experience aligned with its exhibitions.

All three museums continue to pursue renewal of their exhibition spaces with the help of contributions, sponsorships and collaborations from the public and private sector as Ingenium has limited resources to do so independently beyond minor remedial works. In 2018-2019, the CASM will be developing a fundraising plan for the renewal of its permanent Cold War exhibition. With the funding support of the Canadian Space Agency, the CASM plans to develop an exhibition on medicine and space that will be featured in its new temporary exhibition space from December 2018 to March 2021. It will highlight Canada’s leadership in space medicine technologies and their terrestrial applications.

Planning for future exhibitions at the CAFM will focus to a “food security” lens. Concepts are being developed for exhibitions through 2018-2019 to 2022-2023 and include the topics of soil conservation and management, aquaculture and nutraceuticals. New exhibitions at the CAFM are dependent on raising funds from external sources and benefit from the input of national advisory councils and public consultation.

The CAFM will launch a new temporary exhibition on May 18 for the Worldwide Day of Botanical Art and International Museums Day -- Plant Portraits is an art exhibition featuring original botanical artworks by national artists. The outdoor exhibition, Discovery Park, will have new installations set up in the summer of 2018 featuring contemporary technology and research in the agricultural sector such as a bee vectoring device that is being used to reduce grey mould in pollinated plants. Finally, new gardens and interpretation panels will be installed in the Soil Lab discovery zone.

Special exhibitions provide new experiences and learning opportunities for visitors. In summer 2018, the CSTM will welcome its first major special exhibit “The Art of the Brick” in the new temporary exhibition hall, which is designed with the strictest temperature and humidity controls in order to accommodate travelling exhibitions of up to 920 m². In 2018-2019, the CASM will be hosting the international exhibition “Beyond Planet Earth: The Future of Space Exploration” from May until September 2018.

Ingenium is developing a plan to contribute to and facilitate a national dialogue on the presence of Women in STEM by raising awareness about the challenges faced by women in these fields, and by providing examples of the successes of women in the various fields of science and technology. In 2018-2019, Ingenium will implement its Women in STEM (science, technology, engineering and mathematics) initiative, with the help of an advisory council, to support international efforts on this front led by UNESCO. The first graduate fellowship will be awarded under the new “Ingenium-University of Ottawa Fellowship in Gender, Science, and Technology”. Ingenium will also develop the content of a national travelling display that will explore individual stories illustrating the journey of Women in STEM. It will also update the Women of Innovation website to connect all of the elements of the initiative on the corporate web platform and develop a communications campaign.

Over 2018-2019, school programs at the museums will continue to offer teachers curriculum-connected content that will engage students in hands-on science and technology experiences, with enhanced content on youth in STEAM. In 2018-2019, Ingenium will support the 2nd iteration of the Ingenium Foundation’s STEAM Horizon Awards. Five young people, including at least two Indigenous students, recognized for achievements in the fields of science, technology, engineering, arts and math (STEAM), will receive a \$25,000 prize for their post-secondary education in a STEAM field.

In 2018-2019, Ingenium, with its partner content providers, will continue to grow the crowd-sourced digital storybook of Canadian innovation, by linking it to other initiatives such as Women in STEM. The Innovation150.ca site will transition to a new domain name under the Ingenium channel and with Ingenium branding, with new features added to enable the curation and grouping of stories.

| Strategies for SO 2 | 2018–2019 | 2019–2020 | 2020–2021 | 2021–2022 | 2022–2023 |
|---|--|---|----------------------------------|-----------|-----------|
| Create unique exhibitions that are relevant, engaging and entertaining experiences. | Pursue exhibition space renewals at the museums (ongoing). | | | | |
| | Develop digital media standards for interactives. | Proceed with phasing in the new standards across the museums. | | | |
| | Develop a long-term plan for exhibitions. Renew exhibitions and public program policies. | Implement the long-term exhibition plan (ongoing). | | | |
| | Host special exhibitions (ongoing): | | | | |
| | Art of the Brick | | | | |
| | Beyond Planet Earth | Da Vinci | | Bicycles | |
| Offer STEAM educational programming in formal and informal forums. | Host annual STEAM Youth Horizon awards (ongoing). | | | | |
| | Develop content for Women in STEM initiatives | Launch communication campaign | Support Women in STEM (ongoing). | | |
| | Develop STEM/STEAM educational programming and collaborative initiatives (ongoing). | | | | |

| | |
|--|---|
| | Deliver virtual and digital educational programs for families and educators (ongoing). |
| Celebrate significant and inspiring Canadian science and technology innovations. | <p>Develop new collaborations with academia, industry and government to showcase innovations at the museums (ongoing).</p> <p>Merge Innovate150 platform in Ingenium channel.</p> |

Outcome for SO 2: Ingenium delivered programs, products and services that tell the stories of Canadian ingenuity and innovation.

| <i>Performance indicators</i> | <i>Targets for 2018–2019</i> |
|--|---|
| - Attendance at CAFM, CASM and CSTM | - CAFM: 173,000/CASM: 245,000/CSTM: 520,000 |
| - Number of downloads of educational materials | - 90,000 downloads |
| - Percentage of visitor satisfaction | - 90% satisfaction |
| - Number of school programs / number of participants | - CAFM: 550 school programs/ 15,000 participants - CASM: 235 / 7,000 - CSTM: 1,000 / 30,000 |

4.3.3 National and Global Reach

Ingenium recognizes that many Canadians and international audiences do not have the opportunity to visit the museums to experience live, hands-on learning about the science and technology innovators and inventions. Moreover, physical exhibition offerings are limited by museum floor space. That is why it has developed so many different approaches, both physical and digital, for promoting science and technology literacy outside of the museums' walls, into communities across Canada.

With the success of the *Let's Talk Energy* initiative—a multi-year energy literacy program that reaches Canadians across the country through social media, webinars, events and travelling exhibitions—it is extending operations out to 2019 with a new strategic plan launching in 2018. Key activities in the upcoming year include national outreach at public events, "To What Degree" travelling exhibition on climate change adaptation, and activities across the country for Talk Energy Week in February 2019.

Ingenium's international outreach is expanding to include many heritage organisations, academic institutions, governments, and individuals, internationally, including those in South Africa and China. Building relationships through heritage that showcases Canadian innovations in science and technology, improves cross-cultural understanding and facilitates dialogue and exchanges. In 2018-2019, Ingenium will continue to support the development of an initiatives arising from its MOU with the Shanghai Science and Technology Museum, as well as continue to pursue other collaborative initiatives with foreign heritage institutions.

In 2018, Ingenium will host the conference of the International Committee for Museums and Collections of Science and Technology (CIMUSET), and begin planning to hold the ARTEFACT international conference in 2020. These activities support the building and fostering of new networks that support broadening outreach.

Focussing on space innovation, the CASM will initiate the Connected North project in 2018-2019, as well as launch an Aero/Space Knowledge and Skills network in 2018-2019, the purpose of which will be to facilitate collaborations among academia, industry and government participants, and to serve as a public platform to connect people to Canadian companies and technological research and innovations. The Museum support the network and help it find new ways of communicating and interpreting highly technical subject-matter with the public. These initiatives link back to Ingenium's promotion of STEM/STEAM careers and innovation, the Canadian Space Agency's renewed national outreach and education mandate, and the government's Innovation and Skills Plan.

Ingenium will continue to explore ways to build on the success of its mobile games, which have been downloaded in over 200 countries and allow Ingenium to reach people it could never have imagined were it not for digital platforms. The release of the *Ace Academy: Black Flight* game on the Nintendo Switch platform is expected in 2018-2019. This is a collaborative effort with SEED Interactive. The CASM is also working with SEED and Algonquin College students to develop virtual reality simulators that will be piloted on the museum site and then go across the country.

Ingenium will expand the offerings of the travelling exhibitions program, including designing new exhibitions through the collaboration of other institutions and expanding its network of venues domestically and abroad. In 2018-2019, Ingenium will build on its relationships developed through the co-curated international exhibition on bicycles, to increase venues for other travelling products. Ingenium has experienced more success in finding collaborators and contributions when on-site exhibition development is accompanied by an outreach product. In 2018-2019, a new travelling exhibition will be developed on medicine and space, mainly with the support of the Canadian Space Agency.

Ingenium will also explore the market for sharing curated content digitally in the form of 2D exhibits, building on the success of the "Climate Change is Here" travelling exhibit, which was hosted in venues in the Canada and Mexico over 2017-2018. The 2D exhibit format allows a venue to rent the digital files, print the images on site, thereby reducing exhibit transportation costs. Ingenium will continue working with a third-party consultant to develop the theme for a travelling exhibition based on the science and technology collection that would have international appeal.

In 2018-2019, Ingenium will further increase the content available on its open platforms, by digitizing more images and archival materials. It will launch a new Digital Archives portal during Archives Awareness week in April 2018. Ingenium will continue to share its experimentation and lessons learned in Open Heritage with other governmental and academic institutions.

In 2018-2019, Ingenium expects that the documentary which traces the CSTM renewal project will be released; some Canadian broadcasters have already signed on to air it, with some international broadcasters showing interest. Webisodes on women in STEM will be produced. The video format provides another means for Ingenium to reach citizens on the platform of their choice, and deepens the synergies created across its exhibition, program, and digital offerings.

In 2018-2019, Ingenium will continue to rebrand its platforms, initiatives, and offerings under the common use name "Ingenium –Canada's Museums of Science and Innovation" and deepen this brand awareness both nationally and internationally. Ingenium will continue to explore new and creative opportunities to reach diverse audiences and market the brand in new ways.

| Strategies for SO 3 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 |
|---|--|---|----------------------------------|-----------|-----------|
| Build a creative and relevant line of outreach products. | Promote and coordinate artifact loans across Canada (ongoing). | | | | |
| | Launch new travelling exhibitions or redevelop existing ones through collaborations and sponsorships (ongoing). | | | | |
| | Marketing of travelling exhibitions products (ongoing). | | | | |
| | Launch VR simulators. | Launch new mobile applications (ongoing). | | | |
| Build and sustain strong regional, national and international networks. | Produce up to 12 documentaries or video content over the next four years (2017-2018 to 2020-2021). | | | | |
| | Continue to contribute, enrich and manage outreach networks (ongoing). | | | | |
| Increase awareness with new marketing and branding strategies. | Sustain, establish and develop new relationships with international organizations aligned with the global outreach strategy (ongoing). | | | | |
| | Complete rebranding of corporation to Ingenium | Continue to promote new branding. | Evaluate impact of new branding. | | |

Outcome for SO 3: Ingenium developed and created products that reached, connected and engaged with new and existing audiences outside the museums.

| Performance indicators | Targets for 2018-2019 |
|--|-----------------------------------|
| - Number of virtual reach, connections and engagements* | - 26.1 million |
| - Attendance for travelling products and national programs | - 3.84 million |
| - Number of Edukit rentals/number of youth engaged | - 25 Edukit rentals / 1,000 youth |

* Virtual reach is tabulated based on the number of impressions (on Twitter and Facebook), Flickr and website views. Virtual connections is the total number of followers on social media. Virtual engagements is the number of *re-tweets, comments, shares, YouTube views of NMST content on social media.*

4.3.4 Sustainable and Profitable

Being sustainable and profitable for Ingenium means ensuring that the financial and human resources and facilities are in place to achieve successful program outcomes. Decisions with respect to revenue-generating opportunities, such as special exhibitions and new programs, are founded on business cases that demonstrate value-for-money. The museums continue to make adjustments to their educational and public programs to ensure they meet the needs of their clientele.

In 2018-2019, Ingenium will implement a new rental marketing and sales strategy to aggressively promote its existing facilities at CAFM and CASM as well as the new auditorium, conference hall and other rental spaces within the renewed CSTM. The key objectives of the strategy include growing the client base and focussing on events with higher profit margins, which will lead to increased rentals and revenues.

In 2018-2019, Ingenium will continue to grow the membership program. It sold a record number of memberships coinciding with the CSTM's re-opening. Ingenium will review its membership benefits, and will develop other mechanisms to facilitate renewals, and to retain members at the time of renewal.

Ingenium will continue to focus its efforts on obtaining sponsorships and donations, developing relationships and putting a greater emphasis towards increasing philanthropic activities, as these sustain Ingenium's ability to invest in new exhibits and programming. In 2018-2019, the focus will continue to be on sponsorships for the renewed CSTM's programs, as well as exhibitions and programs on space and soil being developed at CASM and CAFM, respectively. Ingenium will also begin to investigate sponsorship opportunities for developing new offerings that will become available with the C3.

As a highly skilled workforce remains one of Ingenium's greatest assets, it remains dedicated to fostering leadership and providing career development and learning opportunities to staff in support of the corporate succession planning process as well as for individual employee growth. In 2018-2019, Ingenium will continue to introduce initiatives to promote a healthy workplace including opportunities to promote mental health awareness. Ingenium is also committed to building a workforce that is both socially and culturally diverse. In 2018-2019, it will focus on identifying and removing barriers that may be present in its hiring, training and promoting processes.

In 2018-2019, Ingenium will review its human resources plan in light of the new offerings as part of the new Collections Conservation Centre. Ingenium will also invest in proper accommodations for the corporate staff moving into the C3.

Ingenium is also investing in information management and technology tools to support and facilitate the work of its staff. The Media Manager software has been provided to all staff to support the management of corporate information assets. Training on Media Manager will continue into 2018-2019. The enterprise management system piloted at CSTM in 2017-2018 as part of its exhibition renewal, will be assessed for rolling it out at CASM in 2018-2019 and then at CAFM in the future, as well as potentially providing it on an open source platform.

| Strategies for SO 4 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 |
|---|--|--|---------------------------------|---|-----------|
| Implement a sound business model that diversifies and maximizes commercial returns. | Develop site-specific business plans on a triannual basis and review annually (ongoing). | | | | |
| | Focus on membership renewals. | | | Evaluate membership program & adjust. | |
| | Implement new marketing and sales strategy for site rentals. | Incorporate C3 facilities in rentals and sponsorship. | Implement pricing for C3 tours. | Review rental strategy and food services. | |
| | Pursue retail sales strategy and compliment with retail products mix (ongoing). | | | | |
| Invest in digital (creative) infrastructure. | Implement Media Management System. | Training on Media Management. | | Evaluate and adjust Media Management. | |
| | Contribute content to Open Heritage data platforms (ongoing). | | | | |
| | Develop plan for further EMS roll-out | Roll-out Enterprise Management System at CASM and then at CAFM | | | |

| | | | |
|--|---|-----------------------------------|---|
| Invest in our workforce and workplace. | Develop and implement initiatives to support a diverse workforce. | | |
| | Support employee development to meet succession plan and business plan needs (ongoing). | | |
| | Develop new HR plan for the C3. | Implement new HR plan for the C3. | Update HR plans as business plans evolve (ongoing). |
| | Provide staff accommodations in C3 | | |

Outcome for SO 4: Ingenium is a profitable, innovative, well organized, and financially viable organization.

| <i>Performance indicators</i> | <i>Targets for 2018–2019</i> |
|--|--|
| - Amount of operating revenue generated | - \$7.352 million in revenue generation |
| - Amount of contributions from donations, sponsorships and in-kind | - \$1.6 million in contributions and sponsorships |
| - Number of collaborative agreements | - 3 new active agreements (with signed MOUs) for a total of 33 |
| - Number of training hours for staff | - 2,000 hours |

4.3.5 Renewed and Innovative Physical Infrastructure

Accommodations include all activities which involve the physical environments that are required to house, protect and display the collection; the public facilities where hundreds of thousands of on-site visitors are welcomed each year; and office and administration space for staff.

The CSTM modernization project was completed in time for opening to the public on November 17, 2017. Over 2018-2019, Ingenium will undertake evaluations of the CSTM to identify areas that require improvements or enhancements, both in terms of the exhibition spaces and the physical building. Ingenium will also invest in accessibility initiatives to render the Museum more accessible to visitors with varying abilities.

As part of the federal infrastructure initiative announced in Budget 2016, Ingenium received funding totaling \$156.4 million for the construction of, and move to, a new Collections Conservation Centre (C3) to preserve and protect priceless Canadian heritage artifacts. It will feature specialized temperature and humidity controlled, sealed and secure artifact storage space, laboratories and workshops, as well as the technical equipment to preserve and conserve collections. In 2018-2019, Ingenium will substantially complete the construction of the new building, which will be ready for fit-up and begin move-in by late fall 2018.

Ingenium has also completed a Master Plan for the CSTM site which includes the development of a new museum park on the grounds. Ingenium will continue to develop its business case and fundraising to complete the site works and park redevelopment.

In 2018-2019, Ingenium will continue to explore funding models for a new conservation and restoration facility at the CASM site that would include technical laboratory space. As the aviation collection expands, so does Ingenium’s need for a conservation and restoration facility at the CASM.

As the CAFM explores new frontiers and diversifies its audiences with the Learning Centre, it continues to look to the future. To complete the final phase of the Master Site Plan, the CAFM will continue to raise

awareness and investigate the feasibility of a capital campaign for the Food Innovation Centre. This space will serve as an inspiring backdrop for national discussions on food literacy, food security and food policy, while providing amenities for visitors, and revenue-generating opportunities such as facility rentals and retail space.

With funding from Budget 2016, Ingenium will complete health and safety projects carried over from last year and those identified for funding in 2018-2019. Ingenium will also work on plans for upcoming projects. This temporary capital funding will address a number of deferred capital replacements and repairs, which will result in Ingenium's sites being safer and more secure for the collection, the farm animals, and the visitors, volunteers and staff.

| Strategies for SO 5 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 |
|---|--|---|--|-----------|-----------|
| Launch the renewed CSTM. | Evaluations and remedial work at the CSTM. | | | | |
| Address the need for a conservation and restoration hangar for the aviation collection. | Strengthen business case for hangar. | Identify sources of funding for the hangar. | Build and open the hangar should funding be secured. | | |
| Capital campaign for Food Innovation Centre at CAFM. | Study feasibility of capital campaign for the FIC. | Launch the capital campaign. | Build and open FIC should funding be secured. | | |
| Design and build the Collections Conservation Centre. | Construction and fit-up of the C3 building. | Move into the C3. | | | |
| Implement health and safety projects identified for Budget 2016 funding. | Complete the projects identified each year (to 2020-21). | | | | |

Outcome for SO 5: Ingenium's three museum campuses are recognized by Canadians and international audiences as destinations of choice in the Canada's Capital Region.

Performance indicators

Targets for 2018-2019

- | | |
|---|-----------------------------------|
| - Successfully launch the capital campaign for the FIC | - Planning continued |
| - Identify funding for aviation conservation and restoration hangar | - Business case reviewed |
| - Meet milestones for the Collections Conservation Centre | - Milestones met |
| - Health and safety projects are completed on time and within budget. | - 6 identified projects completed |

5.0 FINANCIAL DISCUSSION

5.1 Financial Overview³

5.1.1 Year in progress

Ingenium is forecasting higher than anticipated revenues for 2017-2018, totalling \$8.53 million compared to the original projection of \$7.74 million due to the successful reopening of the CSTM and interest revenues, a portion of surplus revenues were invested in the Canada Science and Technology Museum renewal project.

5.1.2 Planning Period

Ingenium's plans for the 2018-2019 to 2022-2023 are based on the assumption that it will continue to receive the base level of appropriations from government and temporary capital funding to complete health and safety-related projects across its sites to 2020-2021.

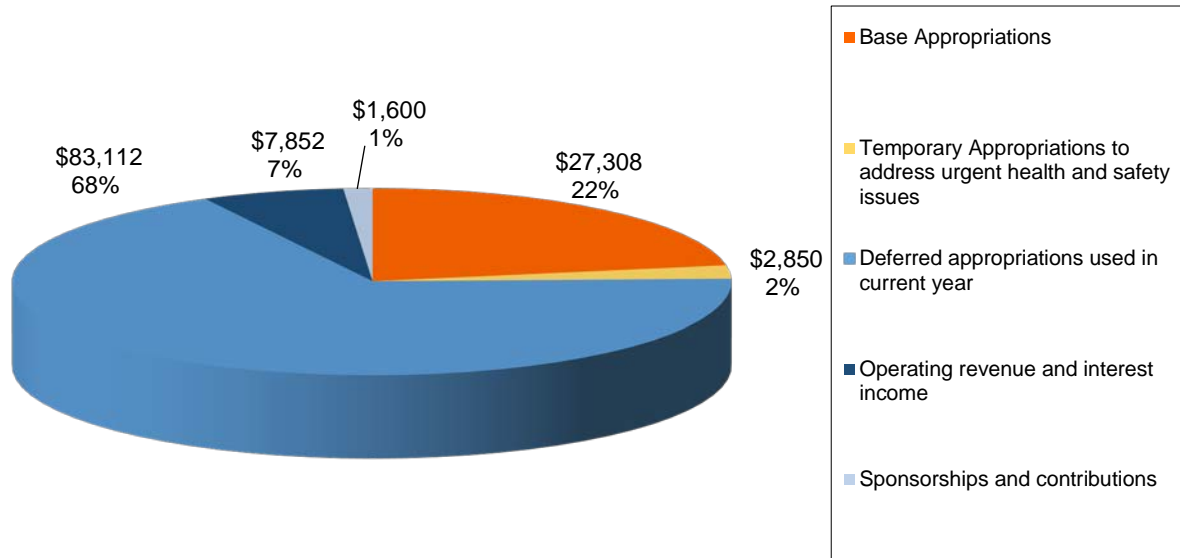
In terms of revenues, Ingenium expects that starting in 2018-2019 and ongoing, operating revenues will exceed the levels that were achieved prior the closure of the Canada Science and Technology Museum, as the renewed CSTM will be a significant draw for schools, residents and tourists. Ingenium expects to sustain a total revenue level of approximately \$8.8 million annually by retaining its existing base of visitors and audiences, clients, collaborators and sponsors as well as attracting new ones, through engaging and innovative initiatives, exhibitions and programs.

Over the planning period of 2018-2019 to 2021-2022, Ingenium presents balanced operating and capital budgets with the exception of 2019-2020, when it projects a loss of \$1.668 million to use its equity to invest in the Collections Conservation Centre to address unavoidable costs that may not be absorbed by the project's budget.

The sources of funding for 2018-2019 are proportionally shown in Chart 1 below.

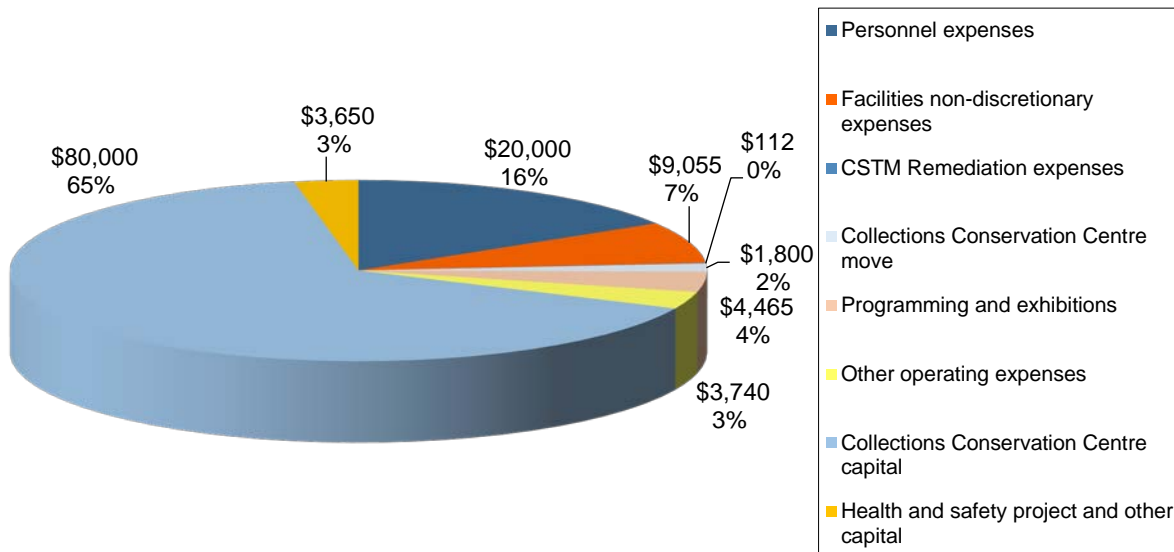
³ Appropriations are reported on a cash basis except for the appropriation amount presented in the Statement of Operations (see Section 6.0) that is reported on an accrual basis in accordance with the Canadian public sector accounting standards applicable to government-not-for-profit organizations.

Chart 1
Source of Funds 2018-2019
(in thousands of dollars)



The majority of Ingenium’s spending in 2018-2019 will be to complete the new Collections Conservation Centre, and for salaries to deliver exhibitions, programs and collections management. The amortization of capital assets is accounted for in the Museum and Collection Buildings core responsibility. Chart 2 below shows the proportions of planned expenditures along key responsibilities.

Chart 2
Operating and Capital Expenditures* 2018–2019
(in thousands of \$)



* Amortization of \$6.5 million not included.

5.2 Financial Planning Assumptions and Projections

5.2.1 Parliamentary Appropriations

Ingenium parliamentary appropriation for the fiscal year 2018–2019 will total \$30.158 million on a cash basis. Parliamentary funding is comprised of Ingenium’s base appropriations of \$27.308 million, of which \$26.508 million will be allocated to the operating budget and \$0.8 million to the capital budget, as well as \$2.85 million in temporary capital funding to complete health and safety-related recapitalization projects.

5.2.2 Expected Attendance

Revenue projections are intrinsically linked to the visitor attendance at the museums. Visitors typically pay admission and parking; they have the option of partaking in a thematic experience for an extra fee, purchasing food or beverages, and shopping in the boutiques.

Paid attendance includes visitors that pay an admission fee at the door, whether full price or reduced-rate, as well as members, participants in educational and other programming and group tour, guests at corporate and museums after-hours events, facility rental users and birthday party’s attendees, for all of whom some form of payment has been received. Unpaid attendance includes people using the Museum site without actually using the facilities (i.e. land use only), as well as visitors that visit the museums during the free admission periods.

The total attendance target for the budget year 2017–2018 was 595,000 visitors, which has been revised to a forecast of 629,000 visitors to reflect the success of events surrounding the Canada 150 celebrations at the CASM and CAFM and the highly attended re-opening of the CSTM in November 2017. Starting in 2018–2019, the attendance numbers for the CSTM are expected to be sustained at approximately 30% higher than the average total prior to closure. In terms of future trends, the attendance at CAFM and CASM are expected to be aligned with those of the previous years (see Table 1), with a small decrease to reflect the expectation that some visitors will migrate to the CSTM site.

Table 1
Visitor Attendance

| | 2014–2015 | 2015–2016 | 2016–2017 | 2017–2018 | | 2018–2019 |
|--------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | Actuals | | Budget | Forecast | Budget year |
| CSTM – Paid | 144,652 | - | - | 130,000 | 145,000 | 475,000 |
| CSTM – Non-Paid | 20,986 | - | - | 20,000 | 22,000 | 45,000 |
| CASM – Paid ¹ | 167,148 | 182,806 | 237,000 | 185,000 | 187,000 | 175,000 |
| CASM – Non-Paid | 44,003 | 39,363 | 45,000 | 75,000 | 90,000 | 70,000 |
| CAFM – Paid | 146,703 | 149,892 | 148,000 | 150,000 | 159,000 | 143,000 |
| CAFM – Non-Paid | 32,861 | 37,676 | 35,000 | 35,000 | 26,000 | 30,000 |
| Total | 556,353 | 409,737 | 465,000 | 595,000 | 629,000 | 938,000 |

¹ Temporary increase in 2016-2017 due to Star Trek: Starfleet Academy Experience

5.2.3 Revenue Projections

Ingenium expects to supplement its budget with a number of funding sources including revenues, sponsorships, and philanthropic support. Total revenue from all sources for Ingenium is projected at \$9.452 million for 2018–2019, which reflects the first full-year of operating the CSTM as well as the

presentation of two special exhibitions: *The Art of the Brick* at the CSTM, and *Beyond Planet Earth* at the CASM.

Admissions, Memberships and Programming

Ingenium's largest sources of self-generated revenue come from admissions, educational and other on-site programs, and memberships, in that order.

Admission revenue

The projected revenue from admissions for 2018–2019 is based on the expected paid attendance total of 793,000, of which an estimated 430,000 visitors will pay admission at the gate. The balance of paying visitors are captured in programming, membership, and facility rentals revenues.

Educational Programming revenue

Visitors also come to the museums through programming activities, which generate revenue from fees charged for school groups, camps, guided tours and parties. Revenues from this category will increase significantly in 2018-2019 given the CSTM's re-opening as its museum building is the largest and is able to host a higher number of school groups and camps. Ingenium expects that some school groups that visited CASM in recent years may elect to visit the CSTM instead.

Membership revenue

Ingenium has a tiered membership program that provides different categories of memberships and privileges, which are listed on [Ingenium's website](#). As members receive unlimited admission to the museums, they are included in the attendance numbers above and are considered paying visitors for the calculation of admission revenue. Ingenium's successful membership renewal campaign prior to opening the CSTM led to renewed memberships, regained lapsed members and surpassed expectations in the significant number of new members in 2017-2018.

Commercial Operations

Commercial revenues stemming from retail revenues, parking and thematic experiences are sources of revenue highly correlated to attendance. Given that attendance at all three museums in the first three quarters of 2017-2018 have been higher than projected, so too have the revenues from these commercial operations. This trend is expected to continue over the next few years as the CSTM experiences its first full year of operations since 2014, with significantly better offerings than prior to closure.

Retail / boutiques revenues

Two of the three museums have on-site boutiques (CASM and CSTM), complemented by a corporate [online retail site](#). The CSTM boutique will be stocked with a greater mix of retail products based on consumer interest shown since opening. Ingenium expects the retail sales revenues to spike in 2018-2019 to reflect the attendance projections at CSTM during its first full year of operations.

Parking revenue

Parking at the museum sites is available for a daily fee. Visitors can re-use the parking receipt throughout the day at any of Ingenium's museums. A third-party company monitors the parking, collects parking fees and maintains the meter machines. Ingenium also has an agreement to rent parking spaces at the CASM to the Montfort Hospital, which began in 2015-2016 and has been extended until part-way into 2018-2019. Ingenium created a new temporary parking lot on the CSTM site for both visitors and the consultants and construction workers.

Facility rentals revenue

The calculation of facility rentals revenue uses a fee per event model plus a profit-sharing model with the on-site food services provider. Additional preferred caterers also pay an annual fee to Ingenium.

The CSTM facility rentals will begin as of January 2018 and are expected to grow even more with Ingenium's new facility rental marketing and sales strategy. Over the planning period, and over the planning period assumes the revenues will remain relatively consistent with modest increase in number of rentals and in the profit margin per rental.

Thematic experiences revenue

Visitors may choose to participate in unique thematic experiences offered at the museums (CAFM and CASM only) at an additional cost. The CASM has seen the most success with these experiences, with aircraft rides and simulator rides. Ingenium expects the popularity of thematic experiences to be sustained over the planning period.

Farm operations revenue

The CAFM includes a demonstration working farm which generates revenues from milk production. Revenues from this activity remain relatively constant for the planning period.

Other (miscellaneous) revenue

An amount has been budgeted, normally on a cost-recovery basis, for revenues from licensing and copyright, which depends heavily on the production and uptake of travelling exhibitions. With the popularity of Ingenium's suite of travelling exhibitions the projected revenues in this category have been increased in 2017-2018. The projected revenue for the budget year reflects the consistent base amount of revenues typically garnered.

Sponsorships and Contributions

Ingenium seeks to increase sponsorship and create long-term collaborations to enhance programs and deliver on its mandate. The revenues and expenses of projects funded from new sponsorships will permit Ingenium to advance projects showing corresponding income and expenses and will not affect the net income for the planning period.

In 2017-2018, contributions saw a spike due to sponsorships for the CSTM, as well as other initiatives and programs. In 2018-2019, the target is feasible and on par with the average result during the years prior to the CSTM reopening.

Ingenium anticipates a contribution of \$400,000 from the Ingenium Foundation in 2018-2019. For the CSTM renewal, greater interest has come from sponsorship opportunities.

Other contributions in this category include contributed support from employees from other government organizations for which the fair market value can be determined.

Investment Income

The short-term cash balance is invested in low-risk vehicles (i.e. GICs) with an expected yield of 1.5%. The increase in the cash balance is affected by the timing of the availability of the capital infrastructure funding and when the work is completed. The current cash balance being carried, associated with the major infrastructure projects underway, is yielding a higher investment revenue. Ingenium expects to yield

interest income in 2018-2019, earned on its equity as well as on funds in reserve to complete the Collections Conservation Centre project and other smaller infrastructure projects.

5.3 Operating Budget 2018-2019

5.3.1 Planned Expenditures according to the Core Responsibilities

The government funding provided to Ingenium is allocated against and reported on to government according to its Core Responsibilities.

Planned expenditures for 2018–2019 and subsequent years take into consideration the full-year operations of the CSTM, as well as the ongoing and new activities planned over the period identified in the previous chapter of this plan. Ingenium’s projections assume that the five-year strategic framework for the 2015-2016 to 2019-2020 period will continue until a new five-year plan is developed in 2019-2020. Table 2 shows how the strategic objectives and outcomes align with its Core Responsibilities.

Table 2
Strategic Objectives and Outcomes mapped to the Core Responsibilities

| CORE RESPONSIBILITIES | STRATEGIC OBJECTIVES AND OUTCOMES | |
|---|---|--|
| <p><i>Heritage Preservation and Research</i></p> <p>Developing and preserving a comprehensive national science and technology collection; providing access to the collection; and sharing research and expertise to enhance knowledge of the collection.</p> | <p>1. Best in Class – Collection</p> <p>Ingenium has a well-researched, preserved, comprehensive and rationalized collection that is accessible virtually and physically to all Canadians.</p> | |
| <p><i>Exhibits, programs, and outreach</i></p> <p>Interpretation of the collection and demonstration of scientific and technological innovations and inventions, and their impact on society, through the delivery of virtual and physical exhibits and educational programs for museum visitors and global audiences.</p> | <p>2. Best in Class – Education and Exhibitions</p> <p>Ingenium delivered programs, products and services that tell the stories of Canadian ingenuity and innovation.</p> | <p>3. National and Global Reach</p> <p>Ingenium developed and created products that reached, connected and engaged with new and existing audiences outside the museums.</p> |
| <p><i>Internal Services</i></p> <p>Stewardship and management of corporate infrastructure, resources and services.</p> | <p>4. Sustainable and Profitable</p> <p>Ingenium is a profitable, innovative, well organized, and financially viable organization.</p> | |
| <p><i>Museum and Collection Buildings</i></p> <p>Managing the physical environments that house collection objects and exhibits stored and on display at the Canada Agriculture and Food Museum, the Canada Aviation and Space Museum, and the Canada Science and Technology Museum as well as laboratory, workshop and administrative spaces.</p> | <p>5. Renewed and Innovative Physical Infrastructure</p> <p>Ingenium’s three museum campuses are recognized by Canadians and international audiences as destinations of choice in Canada’s Capital Region.</p> | |

Heritage Preservation and Research: \$6.3 million

Heritage preservation and research core responsibility includes all corporate activities dedicated to developing and preserving the collection, such as documenting, cataloguing, conserving artifacts, historical research, the library and archives and related information management services. Ingenium aims to enrich the collection and enhance its national and international reputation.

In preparing for the move to the Collections Conservation Centre, efforts will be strengthened on these activities, including, barcoding and cataloguing, assessments, carry-out conservation intervention, Collection Rationalization and non-artifact disposal. Ingenium is also prioritizing the return of loaned objects no longer on display to their home institution, organisation or individual owner. Moving costs are also included in this category.

Exhibits, programs and outreach: \$14.710 million

The exhibits, programs and outreach core responsibility includes all activities dedicated to the interpretation of the collection and the demonstration of scientific and technological processes to Canadians through exhibitions, national initiatives, educational resources and outreach offerings. All salaries of the museums' staff are included in this cost category. Ingenium aims to engage Canadians with the past, present and future of science, technology and impacts on society through rich and compelling experiences.

Museum and Collection Buildings: \$16.762 million

Museum and Collection Buildings core responsibility includes all accommodations. It refers to all of the activities to operate and care for the physical environments that are required to house, protect and display the collection; the technical conservation and collection laboratories; the public museum facilities; and administration space for staff. Ingenium will create nationally recognized destinations for all Canadians, enriching the collection and its reputation and demonstrating responsible fiscal management.

In 2018-2019, accommodation expenses will increase to complete the construction and fit-up of the Collections Conservation Centre, as well as to carry-out health and safety recapitalization projects on other facilities. These infrastructure projects are made possible thanks to the funding from Budget 2016.

Internal Services: \$7.9 million

Internal services support all of Ingenium's activities, and include costs pertaining to governance, management and reporting requirements, as well as efforts to increase revenue generation through sponsorships and commercial activities and accommodations expenditures to operate Ingenium's three museums' facilities. Internal services comprises all support activities which involve the stewardship and management of corporate infrastructure, resources and services. Investments in tools to streamline processes and gain longer-term efficiencies, such as a new human resources management system, digital asset management system, and procurement system continue to be a priority. Ingenium aims to demonstrate responsible management and governance of financial and other resources, and to attract, develop, support and retain a highly skilled, dynamic workforce.

The budgeted cost increase for 2018-2019 reflects that Ingenium expects to increase spending on business development and commercial operations to meet the staffing demand as a result of the CSTM re-opening, such as membership sales, facility rentals, boutique and admissions staff. These funds are also used to acquire goods for boutiques. These salary and goods costs are recuperated from the commercial revenues.

5.3.2 Operating Expenditures

Human resources absorb more than half of Ingenium's total operating funds. In 2018-2019, Ingenium will represent a total of 232.5 full-time equivalent positions (FTEs), which includes temporary resources hired with skills sets required to support the completion of the construction of the new Collections

Conservation Centre as well as the artifact and staff move. These include a variety of specialties including project management, curatorial and research, and conservation and artifact handling.

The remaining balance from the funds Ingenium received for the mold remediation and stabilization plan of the CSTM will be spent in 2018-2019 to vacate the temporary leased facility once all its contents have been moved or disposed of, if they are no longer required in the renewed CSTM.

Facilities fixed costs, which are forecasted to be \$9.005 million in 2018-2019, are non-discretionary costs associated with the operation of its 19 facilities, based on contractual obligations and market prices, over which Ingenium has little control. Ingenium attempts to slow the increase in facilities costs by using energy efficiency programs, carrying out only essential maintenance, and employing other containment measures. For the balance, Ingenium bridges the gap between the base appropriations and the expenses it incurs for operating its facilities by reducing spending in other areas, such as in exhibition renewal and programming delivery.

Table 3
Operating Expenses

| <i>(in thousands of \$)</i> | 2014-2015 | 2015-2016 Actuals | 2016-2017 | 2017-2018 Forecast | 2018-2019 Budget |
|---------------------------------------|-----------------|----------------------|-----------------|-----------------------|---------------------|
| Personnel costs | \$19,447 | \$18,039 | \$19,790 | \$20,000 | \$20,000 |
| Facilities fixed costs | \$7,995 | \$6,993 | \$7,399 | \$8,742 | \$9,055 |
| Urgent mold remediation | \$1,135 | \$924 | \$327 | \$1,103 | \$112 |
| Collection moving | \$0 | \$0 | \$0 | \$250 | \$1,800 |
| Amortization | \$5,025 | \$4,228 | \$3,654 | \$5,000 | \$6,500 |
| Collection development and management | \$510 | \$575 | \$680 | \$580 | \$590 |
| Programming and exhibitions | \$1,511 | \$2,971 | \$4,402 | \$3,143 | \$4,465 |
| Internal services support | \$1,545 | \$1,595 | \$1,600 | \$1,650 | \$1,650 |
| Advertising | \$335 | \$495 | \$929 | \$850 | \$800 |
| Gift shop products | \$328 | \$274 | \$492 | \$420 | \$700 |
| Total | \$37,831 | \$36,094 | \$39,273 | \$41,738 | \$45,672 |

5.3.4 Travel and hospitality

Ingenium maintains a policy of proactive disclosure by making its Travel and Hospitality Reports available to the public: <https://ingeniumcanada.org/proactive-disclosures>

5.4 Capital Budget 2018-2019

5.4.1 Corporate-Wide Assets

Corporate assets are primarily operational and consist of equipment, including a fleet of vehicles to deliver programming and events off-site, material handling equipment, information technology assets, furniture and fixtures. The sharing knowledge portion of its mandate has changed remarkably as well, with external and internal clients expecting increased access to digital information and images. Data servers, bandwidth, firewalls and digital equipment have become a necessity, and will require increased resources. Ingenium continues to focus on making investments in digital infrastructure and technology that lead to operations efficiencies.

5.4.2 Capital Funding and Capital Expenses

In 2015–2016, Ingenium embarked on a major infrastructure project for the CSTM building and exhibition modernization with one-time capital investment from the Government of Canada totalling \$70.7 million over three years, which Ingenium completed in order to reopen on November 17, 2017. Works to address deficiencies and project close out activities continued to March 2018. Ingenium retained its equity in order to make repairs and improvements to the Museum based on surveys, focus groups and evaluations. Ingenium will proceed with over 2018-19 and 2019-20, with a priority on Museum accessibility.

As part of the federal infrastructure initiative announced in Budget 2016, Ingenium received funding totalling \$150.2 million over two years, to construct a new Collections Conservation Centre to preserve and protect priceless Canadian heritage artifacts. Ingenium will spend \$80 million in 2018-2019 to complete the C3 project. The approximately 36,000 square meter building will house the national science and technology collection, archives and library, conservation laboratories and specialized workshops, as well as the corporate offices. The artifact move will begin by winter 2019, and is expected to take up to three years to complete. The building is expected to be ready for partial occupancy as of March 2019.

Table 4 provides Ingenium’s five-year capital budget.

Table 4
Capital Budget by Major project, Museum and Corporate Assets

| <i>(Thousands of dollars)</i> | 2016–17 Actual | 2017-2018 Forecast | 2018-2019 Budget |
|---|-------------------|-----------------------|---------------------|
| CSTM Modernization | \$40,412 | \$26,827 | |
| Collections Conservation Centre | \$7,344 | \$62,845 | \$80,000 |
| Health & Safety projects | \$688 | \$1,728 | \$2,850 |
| CSTM Scheduled Lifecycle repairs | | | |
| Mechanical | | | \$100 |
| Electrical | | | \$50 |
| Grounds | | | |
| CASM Scheduled Lifecycle repairs | | | |
| Building envelope | | | |
| Interior | | | \$75 |
| Mechanical | | | |
| Electrical | | | |
| Grounds | | | \$50 |
| CAFM Scheduled Lifecycle repairs | | | |
| Building envelope | | | \$25 |
| Interior | | | |
| Mechanical | | | |
| Electrical | | | \$50 |
| Grounds | | | |
| Corporate assets | | | |
| IT infrastructure | \$207 | \$275 | \$275 |
| Security equipment | | \$100 | |
| Farm equipment | \$134 | \$25 | \$25 |
| Technical equipment | \$119 | \$50 | \$75 |
| Fleet & other equipment | \$77 | \$50 | \$75 |
| Permanent exhibitions ¹ | \$655 | \$160 | |
| Total | \$12,244 | \$92,060 | \$83,650 |

¹ Investment in this category is dependent on sponsorship funding received specifically to support permanent exhibitions.

In 2018-2019, Ingenium will also address health and safety associated capital projects and repairs. Ingenium will make essential lifecycle replacements and repairs to facilities and equipment across the CASM, many of which had been deferred for a number of years.

Ingenium will use a capital funding of \$800,000 in 2018–2019 from base appropriations to replace critical components of its building operating systems, information technology infrastructure and software, and capital equipment, as is the case each year.

Other than the temporary capital infrastructure funding, Ingenium’s base appropriation level permits only minimal investment in essential replacement of equipment and urgent repairs that will extend the useful life of buildings.

6.0 FINANCIAL STATEMENTS

Budgets are presented on the accrual basis of accounting, consistent with Ingenium's financial statements and other reports. This presentation displays revenues by source and expenses by activity, consistent with Ingenium's core responsibilities reported in the *Main Estimates*.

The *pro forma* financial statements have been prepared in accordance with Section 4200 series of the Canadian Public Sector Accounting Standards applicable to government-not-for-profit organizations. They are consistent with those reported in the institution's annual report. Ingenium applies the deferral method of accounting for contributions for not-for-profit organizations.

Table 5
Balance Sheet – Accrual Basis
(in thousands of dollars)

| | 2016- 2017 | 2017- 2018 | 2018- 2019 | 2019- 2020 | 2020- 2021 | 2021- 2022 | 2022- 2023 |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | Actual | Forecast | Budget | Projection | Projection | Projection | Projection |
| ASSETS | | | | | | | |
| Current assets | | | | | | | |
| Cash and cash equivalents | \$77,176 | \$92,461 | \$16,939 | \$3,961 | \$3,351 | \$3,441 | \$3,532 |
| Accounts receivable: | | | | | | | |
| - Government departments | \$1,579 | \$1,500 | \$1,500 | \$1,200 | \$900 | \$900 | \$900 |
| - Trade | \$368 | \$375 | \$375 | \$375 | \$375 | \$375 | \$375 |
| Inventories | \$380 | \$600 | \$600 | \$600 | \$600 | \$600 | \$600 |
| Prepaid expenses | \$494 | \$400 | \$400 | \$400 | \$400 | \$400 | \$400 |
| | \$79,997 | \$95,336 | \$19,814 | \$6,536 | \$5,626 | \$5,716 | \$5,807 |
| Other assets | | | | | | | |
| Collection | \$1 | \$1 | \$1 | \$1 | \$1 | \$1 | \$1 |
| Capital assets | \$117,947 | \$204,847 | \$283,197 | \$280,690 | \$274,240 | \$264,540 | \$254,840 |
| TOTAL ASSETS | \$197,945 | \$300,184 | \$303,012 | \$287,227 | \$279,867 | \$270,257 | \$260,648 |
| LIABILITIES AND EQUITY | | | | | | | |
| Current liabilities | | | | | | | |
| Accounts payable and accrued liabilities | \$14,229 | \$4,500 | \$12,000 | \$3,000 | \$3,000 | \$3,000 | \$3,000 |
| Current portion of employee future benefits | \$315 | \$290 | \$280 | \$270 | \$260 | \$250 | \$240 |
| Deferred revenue | \$61,507 | \$88,014 | \$6,102 | \$3,402 | \$2,402 | \$2,402 | \$2,402 |
| | \$76,051 | \$92,804 | \$18,382 | \$6,672 | \$5,662 | \$5,652 | \$5,642 |
| Other liabilities | | | | | | | |
| Employee future benefits | \$130 | \$120 | \$120 | \$120 | \$120 | \$120 | \$120 |
| Long-term advance | \$4,208 | \$4,208 | \$4,208 | \$4,208 | \$4,208 | \$4,208 | \$4,208 |
| Deferred capital funding | \$104,282 | \$191,282 | \$268,532 | \$266,125 | \$259,775 | \$250,175 | \$240,575 |
| | \$184,671 | \$288,414 | \$291,242 | \$277,125 | \$269,765 | \$260,155 | \$250,545 |
| Net assets | | | | | | | |
| Unrestricted | \$3,172 | \$1,668 | \$1,668 | \$0 | \$0 | \$0 | \$0 |
| Investment in Capital | \$10,102 | \$10,102 | \$10,102 | \$10,102 | \$10,102 | \$10,102 | \$10,103 |
| | \$13,274 | \$11,770 | \$11,770 | \$10,102 | \$10,102 | \$10,102 | \$10,103 |
| TOTAL LIABILITIES AND NET ASSETS | \$197,945 | \$300,184 | \$303,012 | \$287,227 | \$279,867 | \$270,257 | \$260,648 |

Note: The Investment in capital line represents the land transferred to Ingenium when it became custodian of its museums.

Table 6
Statement of Operations – Accrual Basis
(in thousands of dollars)

| | 2016- 2017 | 2017- 2018 | 2018- 2019 | 2019- 2020 | 2020- 2021 | 2021- 2022 | 2022- 2023 |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Actual | Forecast | Budget | Projection | Projection | Projection | Projection |
| REVENUE | | | | | | | |
| Admission and programing | | | | | | | |
| Science and Technology | \$78 | \$900 | \$3,330 | \$3,000 | \$1,900 | \$1,900 | \$1,900 |
| Aviation and Space | \$1,657 | \$840 | \$760 | \$760 | \$770 | \$780 | \$790 |
| Agriculture and Food | \$708 | \$815 | \$722 | \$730 | \$740 | \$750 | \$760 |
| Membership | \$285 | \$420 | \$880 | \$520 | \$540 | \$560 | \$580 |
| Retail Boutique Sales | \$828 | \$800 | \$1,250 | \$1,200 | \$1,190 | \$1,190 | \$1,190 |
| Facility Rentals and concessions | \$413 | \$475 | \$550 | \$520 | \$540 | \$560 | \$580 |
| Parking | \$566 | \$475 | \$570 | \$550 | \$535 | \$535 | \$535 |
| Farm Operations | \$363 | \$350 | \$350 | \$355 | \$360 | \$360 | \$360 |
| Thematic Experiences | \$74 | \$90 | \$90 | \$90 | \$95 | \$95 | \$95 |
| Other | \$563 | \$325 | \$250 | \$250 | \$250 | \$250 | \$250 |
| Total operating revenue | \$5,535 | \$5,490 | \$8,752 | \$7,975 | \$6,920 | \$6,980 | \$7,040 |
| Contributions | \$1,747 | \$2,400 | \$1,600 | \$1,600 | \$1,700 | \$1,700 | \$1,700 |
| Interest | \$516 | \$640 | \$500 | \$150 | \$150 | \$150 | \$150 |
| TOTAL REVENUE | \$7,798 | \$8,530 | \$10,852 | \$9,725 | \$8,770 | \$8,830 | \$8,890 |
| EXPENSES | | | | | | | |
| Heritage preservation and research | \$4,723 | \$4,750 | \$6,300 | \$5,600 | \$5,100 | \$4,500 | \$4,500 |
| Exhibits, programs and outreach | \$14,091 | \$13,300 | \$14,710 | \$13,883 | \$12,542 | \$12,796 | \$12,773 |
| Internal services | \$7,993 | \$7,700 | \$7,900 | \$7,900 | \$7,900 | \$7,900 | \$7,900 |
| Museum and collection buildings | \$12,466 | \$15,988 | \$16,762 | \$19,950 | \$21,136 | \$20,542 | \$20,625 |
| TOTAL EXPENSES | \$39,273 | \$41,738 | \$45,672 | \$47,333 | \$46,678 | \$45,738 | \$45,798 |
| Net Results of operations before government funding | -\$31,475 | -\$33,208 | -\$34,820 | -\$37,608 | -\$37,908 | -\$36,908 | -\$36,908 |
| Parliamentary Appropriations * | \$31,476 | \$31,704 | \$34,820 | \$35,940 | \$37,908 | \$36,908 | \$36,908 |
| Net earnings (Loss) ** | \$1 | -\$1,504 | \$0 | -\$1,668 | \$0 | \$0 | \$0 |

* Appropriations are reported on an accrual basis, modified from our parliamentary vote as shown in Table 7.

** Ingenium forecasting a deficit in 2017-2018 and 2019-2020, which will be covered using its unrestricted net assets, in order to invest equity in the CSTM Renewal project and the C3, respectively.

Table 7
Parliamentary Appropriations – Accrual Basis
(in thousands of dollars)

| | 2016- 2017 | 2017- 2018 | 2018- 2019 | 2019- 2020 | 2020- 2021 | 2021- 2022 | 2022- 2023 |
|---|------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Actual | Forecast | Budget | Projection | Projection | Projection | Projection |
| PARLIAMENTARY FUNDING | | | | | | | |
| Base Appropriations | \$26,865 | \$26,865 | \$27,308 | \$27,308 | \$27,308 | \$27,308 | \$27,308 |
| One time funding | \$256 | \$683 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Health and safety funding | \$2,569 | \$430 | \$2,850 | \$3,525 | \$3,250 | \$0 | \$0 |
| CSTM mould remediation funding | \$505 | \$168 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Clawback | \$0 | -\$2,500 | \$0 | \$0 | \$0 | \$0 | \$0 |
| CSTM Infrastructure renewal funding | \$32,610 | \$8,750 | \$0 | \$0 | \$0 | \$0 | \$0 |
| C3 construction project | \$45,624 | \$110,815 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Sub-Total Main Estimates | \$108,429 | \$145,211 | \$30,158 | \$30,833 | \$30,558 | \$27,308 | \$27,308 |
| Deferred appropriations used in current year | \$0 | \$20,308 | \$81,912 | \$2,700 | \$1,000 | \$0 | \$0 |
| Appropriations approved in current year for specific projects in future years | -\$31,218 | -\$46,815 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Amount used to purchase capital assets | -\$49,009 | -\$91,900 | -\$83,650 | -\$5,993 | -\$4,050 | -\$800 | -\$800 |
| Amortization of deferred Capital funding | \$3,274 | \$4,900 | \$6,400 | \$8,400 | \$10,400 | \$10,400 | \$10,400 |
| Appropriations reported in Statements | \$31,476 | \$31,704 | \$34,820 | \$35,940 | \$37,908 | \$36,908 | \$36,908 |

Table 8
Statement of Cash Flows
(in thousands of dollars)

| | 2016- 2017 | 2017- 2018 | 2018- 2019 | 2019- 2020 | 2020- 2021 | 2021- 2022 | 2022- 2023 |
|--|------------------|------------------|------------------|------------------|-----------------|----------------|----------------|
| | Actual | Forecast | Budget | Projection | Projection | Projection | Projection |
| OPERATING ACTIVITIES | | | | | | | |
| Cash received (clients) | \$6,864 | \$52,377 | \$8,752 | \$8,275 | \$7,221 | \$6,980 | \$7,041 |
| Parliamentary Appropriations received for operations | \$28,439 | \$26,804 | \$25,308 | \$25,440 | \$27,108 | \$26,508 | \$26,508 |
| Cash paid to suppliers | -\$16,015 | -\$46,628 | -\$31,682 | -\$47,843 | -\$36,188 | -\$35,248 | -\$35,307 |
| Payments related to salary and benefits | -\$19,536 | -\$18,700 | -\$19,550 | -\$19,550 | -\$19,550 | -\$19,550 | -\$19,549 |
| Cash Received from the Foundation | \$208 | \$2,400 | \$1,600 | \$1,600 | \$1,700 | \$1,700 | \$1,700 |
| Interest received | \$480 | \$640 | \$500 | \$150 | \$150 | \$150 | \$150 |
| Net cash flows generated from/used for Operating Activities | \$440 | \$35,593 | \$4,478 | -\$12,378 | -\$9 | \$90 | \$92 |
| CAPITAL ACTIVITIES | | | | | | | |
| Payments related to capital acquisitions | -\$42,008 | -\$91,900 | -\$83,650 | -\$5,993 | -\$4,050 | -\$800 | -\$800 |
| Net Cash used through Capital Activities | -\$42,008 | -\$91,900 | -\$83,650 | -\$5,993 | -\$4,050 | -\$800 | -\$800 |
| FINANCING ACTIVITIES | | | | | | | |
| Funding for acquisition of capital assets | \$80,751 | \$71,592 | \$3,650 | \$5,393 | \$3,449 | \$800 | \$799 |
| Pay back loan on establishment of the Foundation | -\$325 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Net cash flows from Financing Activities | \$80,426 | \$71,592 | \$3,650 | \$5,393 | \$3,449 | \$800 | \$799 |
| Increase (Decrease) in Cash and short-term investments | \$38,858 | \$15,285 | -\$75,522 | -\$12,978 | -\$610 | \$90 | \$91 |
| Cash and cash equivalents, beginning of year | \$38,318 | \$77,176 | \$92,461 | \$16,939 | \$3,961 | \$3,351 | \$3,441 |
| Cash and cash equivalents, end of year | \$77,176 | \$92,461 | \$16,939 | \$3,961 | \$3,351 | \$3,441 | \$3,532 |