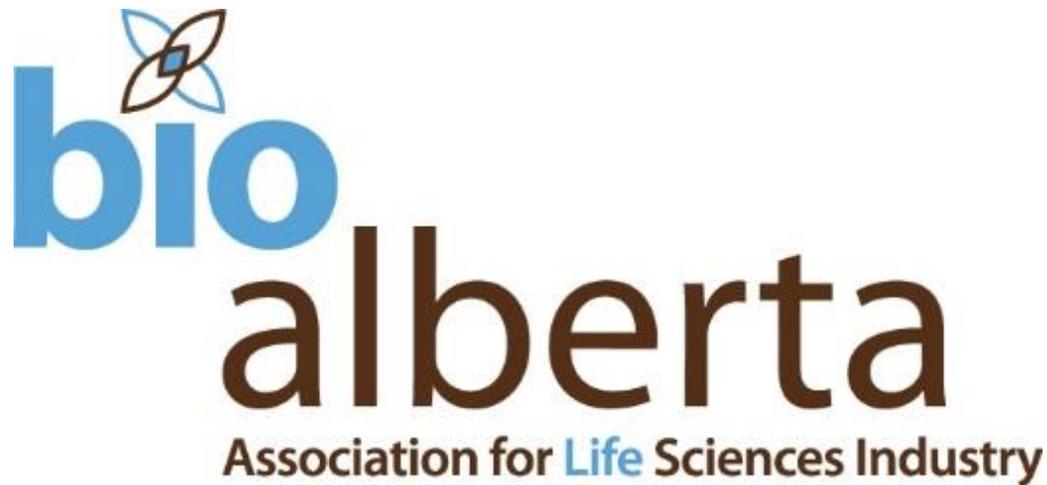


2017



Alberta Medical Device and Technologies Industry

**PATH TO ACCELERATING INDUSTRY DEVELOPMENT AND
GROWTH**

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MAJOR RECOMMENDATIONS

1. **The Government of Alberta** is strongly encouraged to:
 - a. Address procurement challenges and opportunities for Alberta-developed health technology tools. (p. 15)
 - b. Encourage and support an “Alberta First” culture for Alberta-developed, valued and effective health technology tools, if and when there is a fit (p. 15)
2. **Alberta Health Services** is encouraged to:
 - a. Facilitate the establishment of “*Living Innovation Hubs*” that support the co-development, testing and demonstration of new health technology tools. (p. 16)
3. **Alberta Economic Development & Trade** is strongly encouraged to:
 - a. Work with the Alberta Enterprise Corporation (AEC) to create a vencap fund in support of life sciences, medical device, and diagnostic technology SMEs and startups (p.19)
 - b. Complement the Investor Tax Credit by establishing investment funds for seed, angel, and venture stages of company growth (p. 19)
 - c. Develop, implement, and expand programs to facilitate access of Alberta medical device companies to international markets and supply chains, and to attract greater international investment to Alberta companies (p. 19)

FOREWORD

The Government of Canada reports that in 2014, the global market for medical devices was valued at US\$337 billion, excluding in vitro diagnostics. Emerging markets in Asia and Africa together with the overall aging of the global population will drive industry expansion well into the future.

Alberta has the opportunity to capture a significant share of this global growth. To achieve that end, Alberta companies have promoted the idea of developing and implementing a coherent, multi-partner, integrated industry pathway. Establishing such a path, however, would need government, Alberta Health Services, healthcare providers, post-secondary institutions, companies, and funding agencies all to play a significant role. Strategic and operational policies, technology development processes, capacities and capabilities, as well as the management of technology and its health system impacts have been identified as key elements to be addressed in order to achieve enhanced growth of the medical device and technology industry. Involvement and action by multiple stakeholders, being needs driven and end user-focused, and committed to a focused provincial industrial strategy, Alberta will make significant progress towards realizing its goals of improved health outcomes, accelerated industry growth, and increased economic diversification.

This pathway for accelerated growth within Alberta's medical device and health technology industry is the culmination of the efforts and inputs of many individuals and the organizations they represent. The knowledge, expertise and time offered by all participants has been invaluable, is acknowledged and very much appreciated. Of particular note are the members of the steering committee who provided constructive guidance to the development of this forward-looking pathway for the Alberta medical device and technology industry.

- Mel Wong (Chair), President, BioAlberta
- Jason Pincock, CEO, DynaLIFEDX
- Robert Rauscher, Vice President Western Canada, MEDEC
- Don Juzwishin, Director, Health Technology Assessment & Innovation, Alberta Health Services
- Hubert Eng, Senior Director, Life Sciences Industries, Alberta Economic Development & Trade
- Michael Flood, Communications Manager, BioAlberta
- Reg Joseph, Initiatives and Innovations, Alberta Innovates Health Solutions.

About BioAlberta: BioAlberta has been the central voice and organizing hub of the life sciences industry in Alberta since 1998. It is a private, not-for-profit industry association with more than 140 members. The Association's activities are focused on advocacy, promotion, industry development, and networking. In its advocacy efforts on the national stage, BioAlberta joins forces with other life science organizations such as BIOTECCanada and its counterparts in other provinces.

INTRODUCTION

Albertans expect, and the Alberta healthcare community is committed to achieving, the best possible patient outcomes. Providing a sustainable and accountable healthcare system that not only serves the ill and injured but also supports disease prevention and health promotion initiatives and activities requires the integration of people-centered services, a robust research and innovation system, and smarter spending.

Accordingly, the Alberta medical device and health technologies industry is actively engaged in developing leading-edge health technology tools to support enhanced diagnostics, treatment, rehabilitation, and overall health maintenance and improvement. By extension, such work not only improves health outcomes for individuals, but it also boosts the cost-effectiveness of healthcare delivery. By working together, the medical device and health technologies industry and the healthcare system have significant potential to bring economic growth and diversification to Alberta.

Alberta's medical device industry is well positioned to contribute to the diversification of the provincial economy by seizing the opportunity to participate actively in, and contribute to, the growing market for innovative health technology tools locally, nationally, and globally. In fact, devices and technologies developed in Alberta are already having a significant global impact in both how medicine is practiced and on the long-term health and quality of life that patients are able to experience.

Annual global medical device sales are expected to increase to \$440 billion by 2018. Now is the time to build on the significant provincial investments in research, innovation infrastructure, information and communications technology, and big data analytics. Now is the time to clear a path for further industry collaborations and partnerships with key stakeholders including Alberta Health Services and help them blaze a broadening trail in the development of health technology tools that have a clear public benefit to Albertans and position companies to export these tools internationally.

Accelerating Alberta's medical device industry is challenging and not without cost. The return on investment has the potential to be significant for all Albertans. This document lays out a set of priority actions in the areas of policy, technology tool development and technology management that will have a significant impact on the industry as a whole. Such impact will, in turn, contribute positively to population health outcomes, help mitigate the costs associated with an aging population, and diversify the economic base of the Province.

A CASE STUDY: SAFETRACKS GPS CANADA

SafeTracks GPS Canada, headquartered in Red Deer, Alberta, is a leader in the electronic monitoring (EM), providing solutions to improve the safety and peace of mind of dementia patients and their caregivers. In 2015 SafeTracks partnered with Alberta Health Services and the University of Alberta for a technology demonstration in Calgary and Grand Prairie. 40 dementia and Alzheimer's patients were fitted with GPS monitoring equipment – when the patient wandered out of a designated area (either their home or a residential care facility) their caregivers would be alerted by text message and e-mail.

The study provided SafeTracks with clinical data on the performance of their device that they were able to utilize in marketing their product both in Canada and the United States.

STRATEGIC OPPORTUNITIES

Examples of medical devices in high demand around the world include pacemakers, artificial heart valves, diagnostic and imaging equipment, in vitro diagnostics, dialysis equipment, hip and knee implants, synthetic skin, surgical tools, infusion pumps, life support machines, catheters, bandages, as well as information and communications technologies.

Alberta is home to many innovative companies in the health field. Alberta-based medical device companies have already facilitated enhanced healthcare decision-making, delivery, and outcomes through such innovative health technology tools as hygienic keyboards for cleanrooms, laboratories and medical clinics that mitigate cross-contamination and infections in healthcare and research facilities, advanced wound management dressings that utilize the antimicrobial properties of nano-scale silver to enhance healing, software technologies that allow radiologists to view medical imaging data on their smartphones, and 3D imaging and design technology that allow personalized, realistic, and functional [prostheses](#) to be specially tailored to an individual's specific needs and characteristics. These and other medical devices and technologies developed in Alberta have had a significant impact in both how medicine is practiced and on the health and quality of life of patients.

With such successes the Alberta medical device industry has established an effective foothold in the global market. It is well positioned to navigate the switchbacks and ascend to new heights as it focuses on such factors as demographic trends, emerging platform technology developments, as well as practitioner and health system needs and requirements. Specifically, Alberta's companies are actively pursuing the development of health technology tools that:

- Are demand-driven with active participation of the user community, including front-line nurses, technicians, and physicians.
- Focus on the emerging needs and growing expectations of patients, in particular the ballooning burden of chronic illnesses, injuries, and disabilities associated with the world's aging population.
- Leverage Alberta's capacity and capability in software development and communications technologies to support the shift to mobile platforms that underpin remote health monitoring.
- Exploit and expand existing platform technology strengths (nanotechnology, genomics, information and communications technology and big data analytics) to develop devices that facilitate timely, targeted treatment options and decisions, such as real-time bedside diagnostic and therapeutic tools.
- Expand the feasibility of 3D printing technology for medical applications in such areas as customized dental and medical implants, prosthetics, cranio-facial surgery and reconstruction.

Capitalizing on such opportunities will accelerate the growth of the medical device industry resulting in:

- Increased economic diversification, retention of highly qualified personnel, and increased growth in employment;
- Improved healthcare delivery and health outcomes through enhanced diagnostics, improved treatments, the prevention of disease, and the overall promotion of good health;
- Enhanced productivity of the workforce through more effective and time-efficient interventions that allow an earlier return to work;

- More effective management and control of healthcare costs through improvements in employee productivity, quality control, time-saving, as well as direct cost reduction and/or enhanced value for money spent;
- Increased medical device and technology sales provincially, nationally, and internationally creating significant returns on investment for public and private investors;
- The creation of an Alberta medical devices centre or hub for health technology tool development, testing, validation, and commercialization.

ALBERTA'S MEDICAL DEVICE POTENTIAL

Strengths:

Alberta Health Services (AHS), Canada's first and largest province-wide, fully-integrated health system is committed to providing the best healthcare to Albertans in an accountable, affordable, and effective manner. The corporation's goal of ensuring that Albertans receive the right care, in the right place, at the right time no matter where they live in the province, is a key driver of innovation in healthcare delivery and the associated demand for value-added medical devices.

Over the past several decades, governments (municipal, provincial, and federal), industry and academic institutions have made significant investments in building a foundation of assets that can be harnessed to accelerate the growth of the medical device and technologies industry. By bringing together the strengths and assets represented by these investments and commitments, a prosperous medical device and health technologies hub can be developed in Alberta that is collaborative and needs-driven. The province, after years of investments in scientific research, technology commercialization, and company support, is on its way to the summit of a thriving, globally competitive medical device industry. It just needs one concerted effort to reach it

A vibrant hub where co-development of health technology tools is the norm would become the basecamp for a thriving and relevant globally competitive industry that makes a difference in patient care and achieving positive health outcomes, while contributing significantly to the economic and social wellbeing of all Albertans. The assets and strengths to build on include:

- **Alberta Health Services**, responsible for providing health services to over 4 million people. It is noteworthy that AHS has established two innovation centres:
 - **Ward of the 21st Century** (located in Calgary) serves as a research and beta-test site for prototypical hospital design, novel approaches to healthcare delivery, human factors research, and innovative medical technologies.
 - **Glenrose Rehabilitation Hospital** (located in Edmonton) serves patients of all ages who require complex rehabilitation. It offers an array of research and technology development opportunities.

Within AHS, eleven (11) **Strategic Clinical Networks (SCNs)** have been established to challenge and invigorate individuals with passion and expertise in specific areas of healthcare to discover new and innovative ways of delivering care that will provide better quality, health outcomes and value. The areas of focus are:

- **Addiction and Mental Health SCN**
- **Bone and Joint Health SCN**
- **Cancer SCN**
- **Cardiovascular Health and Stroke SCN**
- **Critical Care SCN**
- **Diabetes, Obesity and Nutrition SCN**
- **Kidney Health SCN**
- **Population, Public & Indigenous Health SCN**
- **Respiratory Health SCN**
- **Seniors Health SCN**

- **Surgery SCN**

Note that each of these SCN's provides a focal point for communicating health system needs to, and actively engaging with industry to address these needs. In turn, such joint participation enables Alberta companies to be more needs-driven in health technology tools development rather than attempting to "push" new technologies into the system.

- **Research Centres and Teams** provide expertise, skills, ideas and technologies that support health technology tool development. These include:
 - **Biomedical Engineering, University of Calgary** focuses on imaging and optical instrumentation, bio/nano sensors and diagnostic devices, biomaterials, cell and tissue engineering, and biomechanics.
 - **Centre of Excellence for Head and Neck Reconstruction (COMPRU)** makes use of new materials, 3D visualization, and 3D printing technologies for reconstruction of head and neck injuries.
 - **Biomedical Engineering, University of Alberta** focuses on biomaterials, MRI, magnetic resonance spectroscopy, rehabilitation engineering, and advanced prosthetics.
 - **National Institute of Nanotechnology (NINT)** focuses, in part, on developing technology platforms for new medical devices, sensors and diagnostic devices, and potential new drug delivery systems.
 - **Centre for Machine Learning, University of Alberta** focuses on bioinformatics, database and data mining as well as computer vision and robotics. Medical informatics and brain tumour analysis are areas of specific interest.
 - **The Metabolomics Innovation Centre (TMIC)** supports a wide-range of metabolomics studies for clinical trials research, biomedical studies, bioproducts studies, nutrient profiling, and environmental testing.
 - **Northern Alberta Clinical Trials and Research Centre (NACTRC)** is a research and clinical trials network providing pharmaceutical and research-intensive companies with quality, cost-effective clinical trial research.
 - **School of Health Sciences, Northern Alberta Institute of Technology (NAIT)** provides opportunities for industry to test products in clinical settings. Areas of focus include rehabilitation technologies, health informatics, and healthcare operational efficiency.
 - **Sports and Wellness Engineering, Southern Alberta Institute of Technology (SAIT)** provides services and research in prototype design and manufacturing, and product design, testing and analysis.
- **Funding Organizations** support fundamental research and partner with companies in support of research and technology development activities:

- **Alberta Innovates** is Alberta’s consolidated research and innovation system focused on accelerating the translation of new ideas into applications in areas of strategic importance to Alberta.
 - **Government of Alberta** provides funding to various organizations and institutions in support of building the research and technology development talent, infrastructure and commercialization.
 - **Industrial Research and Assistance Program (IRAP)**, a fundamental component of the National Research Council, provides innovation services and financial support for technology development to small and medium sized enterprises (SMEs) and micro and nano engineering (MNE) in Canada.
- **Industry Associations**
 - **BioAlberta** is Alberta’s life sciences industry association committed to building a strong community for life sciences companies and life sciences consumers in order to meet the growing demand for innovative products and technologies to address global challenges.
 - **MEDEC**, the national association for the Canadian medical device and technologies industry, is a primary source for advocacy, information, and education on the medical technology industry for members, the greater healthcare community, industry partners, and the general public.
 - **Alberta’s Medical Device and Technologies Companies** provide enhanced and innovative technology tools that support the healthcare system as well as patient and population health outcomes.
 - **City of Edmonton** announced its intent to become known as “Canada’s Health City” in the Mayor’s 2016 State of the City address. This branding initiative is a direct reflection of decades of municipal, provincial and federal support for significant infrastructure in the Edmonton area to facilitate the development, commercialization and distribution of health industry innovations.
 - **TEC Edmonton’s Health Accelerator** provides commercialization services for new discoveries through in-house expertise that includes IP assessment and strategy, product prototyping and development, product approval/regulatory expertise, company and technology financing, business development and market access support.
 - **Medical Device Commercialization Centre** is a National Centre of Excellence that connects medical device developers with users and assists them in bringing a relevant and innovative new medical device to the marketplace.
 - **Institute of Health Economics** gathers and disseminates evidence-based information and knowledge to support health policy and practice.

Challenges:

With global demand soaring and a solid footing for discovery, development and deployment of innovative health tools and technologies, there is no doubt about the significant potential to accelerate the growth of the medical device industry in Alberta. However, a number of industry identified challenges need to be addressed in order to create the conditions necessary to stimulate and support that growth. The most prominent include:

- Alberta Health Services commitment to, and support for, entering into partnerships and collaborations with industry to develop, test, demonstrate, validate and commercialize new and innovative medical devices and technologies.
- Procurement and adoption of new medical devices and technologies by Alberta Health and Alberta Health Services.
- Pricing and reimbursement for new medical devices.
- Accessible and affordable Infrastructure for use by medical device and technology companies in support of technology development.
- Access to financing (particularly equity and debt capital with experience in the medical device and health sectors).
- User community and industry communication, collaboration, and co-development processes.
- Managing inertia within the innovation ecosystem.
- Attraction, development, and retention of research, technology development, and especially management talent.

(For a more complete description of the challenges, please see Appendix A)

OPTIMIZING ALBERTA'S MEDICAL DEVICE INDUSTRY FUTURE

Achieving a thriving medical device and technologies industry in Alberta requires a supportive and engaged stakeholder ecosystem in which members are aligned in their focus, policies, and support. Important and significant participants in this ecosystem include all three levels of government, multiple agencies/organizations at arms-length to governments, medical device companies at every industry and sector level, academic institutions, and a host of businesses that make up the *materials to manufacturers to providers to patient* supply chain for the medical device and technology industry

The medical device and technologies industry in Alberta recognizes that its continued viability is reliant upon leveraging the strengths and competencies within its cadre of companies and among its diverse stakeholders. It is industry's intent to work diligently to establish effective collaborations and partnerships with the different levels of government, Alberta Health Services, BioAlberta, MEDEC, healthcare provider organizations, academia, Alberta Innovates, and other related organization. Furthermore, leading industry representatives are eager to work with governments and AHS to develop sound health innovation ecosystem policies and support actions that will achieve the common goals of greater economic growth and diversification.

The destination of this strategic pathway, therefore, is for the medical device and technologies industry to make significant contributions to Alberta's economic and social development while enhancing healthcare practice and outcomes. This will be accomplished through the application of excellent science and technology to enable medical device and technology firms to develop, test, and commercialize real world solutions that build jurisdictional advantage in Alberta. This will be achieved through collective action on the following priorities.

Strategic Intent of the Medical Device and Technologies Industry

By harnessing Alberta's entrepreneurial, technological, research, and clinical strengths, Alberta's medical device industry will be an innovative and productive hub for the development and accelerated growth of medical device companies that deliver health technology tools to optimize patient and population health outcomes while providing economic benefits to Albertans.

Guiding Principles

The medical device and technologies industry pathway for accelerated growth is guided by the following principles:

- Build on strengths
- Be demand- and needs-driven as well as user focused
- Build collaborations and partnerships locally, nationally and internationally
- Be ethical and evidence-informed in development and deployment
- Be impactful – clinical, population health, economic

Focus on Enabling Outcomes

Enabling outcomes are path-critical for making progress towards achieving the desired future state of providing Albertans with timely, sustainable access to leading-edge healthcare practices and capturing a

greater share of the global medical device and technology market. Four enabling outcomes have been identified as necessary for industry growth in Alberta:

- **Innovation Environment** where the policy, clinical, research and organizational environments support the acceleration of discovery, technology development, and commercialization of 21st century health technology tools.
- **Technology Development Environment** where medical device and technology companies have access to available expertise (research, clinical, prototype development, financing, risk management), affordable infrastructure and clinical test settings in order to develop user-focused, innovative health technology tools that demonstrate value for money.
- **Technology Management Environment** that enables: effective mobilization and adoption of medical devices and technologies; health system, patient and population health impact assessment; obsolescence planning; device maintenance and upgrading, and; on-going efficacy evaluation of health technology tools.
- **Access to Data and Data Analytics** that serve as the foundation enabling improvements in clinical and administrative processes and decision-making; assessment of the effectiveness of health promotion and disease prevention initiatives; intervention and treatment, and patient and population health outcomes.

In other words, specific actions are required in areas of policy, technology development, and technology management.

PRIMARY ACTIONS FOR MEDICAL DEVICE INDUSTRY ACCELERATION

In order to realize the strategic outcome of a vibrant medical device and technology industry in Alberta, key actions to achieve these enabling outcomes are required over the next two years. The priority actions for each enabling outcome are outlined below.

ENABLING OUTCOMES	PRIORITY ACTIONS	WHY IS IT IMPORTANT?
<p>Innovation Environment facilitates and supports a thriving Alberta Medical Device Industry</p>	<p>Alberta Health (AH) and Economic Development & Trade (ED&T) are encouraged to develop enabling policies that:</p>	
	<ul style="list-style-type: none"> • Support AHS to engage as an active participant in health technology development, testing, demonstration, and commercialization opportunities. 	<p>Management and staff at AHS will be more supportive and active in collaborating with the medical device and technology industry.</p>
	<ul style="list-style-type: none"> • Encourage and support an “<i>Alberta First</i>” culture for Alberta-developed, valued and effective health technology tools, if and when there is a fit. 	<p>Companies will be able to validate and market their product nationally and internationally more easily as there will be a first “user”. AHS will be able to utilize the most up-to-date, efficacious health technology tools thereby improving the quality of care and population health outcomes.</p>
	<ul style="list-style-type: none"> • Address procurement challenges and opportunities for Alberta-developed health technology tools. 	<p>AHS will have a more stream-lined system that allows for faster decision-making about purchase and use. Industry will have greater clarity in terms of what is required to have a medical device assessed and confidence that it will be done in a timely manner. And overall, the gap between healthcare, social need and economic development will have a coherent bridge where none exists today.</p>
	<ul style="list-style-type: none"> • Address reimbursement management for new, adopted health technology tools. 	<p>The health system and industry will be clear about the principles and decision process for reimbursement for health technology tools.</p>
<ul style="list-style-type: none"> • Support capital development initiatives important to innovation-related activity. 	<p>AHS will have the necessary space or funding capability for (minor) renovations to support collaborations in product development, testing, and demonstration.</p>	

	<ul style="list-style-type: none"> • Support strategies to attract skilled management talent to Alberta. 	On an as needed basis, industry will have the management talent required to accelerate the growth of companies.
	Alberta Health Services is encouraged to develop enabling policies that:	WHY IS IT IMPORTANT?
	<ul style="list-style-type: none"> • Facilitate the establishment of “<i>Living Innovation Hubs</i>” that support the co-development, testing and demonstration of new health technology tools. 	AHS will not only develop a reputation for being a major innovation centre, but it will also be an active participant in identifying technology needs and in bringing new health technology tools into the healthcare setting. It will also become an international hub for companies wanting to test and/or demonstrate their health technology tools. This will be a major step to global markets for Alberta SMEs
	<ul style="list-style-type: none"> • Support the development of a made-in-Alberta process for the clinical evaluation of new health technology tools that is more appropriate to the sector. 	AHS will be a leader in using a new, stream-lined methodology for the clinical evaluation of many new health technology tools that may be more appropriate than the randomized clinical trials approach used in the pharmaceutical industry.
	Economic Development & Trade is strongly encouraged to:	WHY IS IT IMPORTANT?
	<ul style="list-style-type: none"> • Create a “<i>Health Technology Innovation Fund</i>” to support companies in the development, demonstration, and commercialization of health technology tools. 	AHS and companies will be able to access funding to support critical aspects of product development and commercialization. In particular, AHS and companies will be able to fund the AHS costs associated with testing a new technology such as additional staff, staff training, renovations, data collection, adoption costs assessment.
	<ul style="list-style-type: none"> • Work with the Alberta Enterprise Corporation (AEC) to create a vencap fund (dilutive and equity-based) in support of growing medical device and technologies SMEs and start-ups to MNE status. 	Ambitious Alberta companies will have access to the necessary financing to experience accelerated growth.

	<ul style="list-style-type: none"> • BioAlberta and MEDEC are strongly encouraged to: 	WHY IS IT IMPORTANT?
	<ul style="list-style-type: none"> • Establish an “<i>Executive Forum</i>” to share information, report on progress, discuss emerging issues, and engage in mentorship. 	Senior Executives of medical device companies located in and outside of Alberta together with government ministers and senior department officials will not only develop a better understanding of the issues facing their respective organizations but will also be prompted to explore additional opportunities to work together for mutual benefit.
	<p>BioAlberta in collaboration with Alberta Innovates, TEC Edmonton, Calgary Innovates and others as necessary will:</p>	WHY IS THIS IMPORTANT?
<p>Technology Development Environment facilitates the development of user-focused health technology tools</p>	<ul style="list-style-type: none"> • Serve as the point of entry for medical device and technology companies that: <ul style="list-style-type: none"> ➢ Provides information, assistance, and education in navigating Alberta’s health, economic development and innovation systems. ➢ Assists companies to connect to resources as needed including grant programs. 	Being able to access the necessary information and resources more timely and efficiently will enhance a company’s ability to develop, test, and commercialize products more quickly.
	<ul style="list-style-type: none"> • Support the City of Edmonton in the development of an effective mechanism to coordinate affordable access to and use of existing infrastructure by medical device and technology companies. 	Companies will develop and market health technology tools more quickly and potentially at lower cost.
	<ul style="list-style-type: none"> • Establish an early-stage review mechanism that provides feedback to SMEs on their proposed and/or developing health technology tools. 	Early feedback on proposed health technology tools encourages companies to pursue needs-based ideas that have a good chance at success and discourages them from pursuing ideas for which there is no explicit need or market
	<ul style="list-style-type: none"> • Promote TEC Edmonton’s Health Accelerator as a key resource to companies in need of support in areas such as business development, financing, regulatory requirements, product prototyping, market analysis and access, as well as IP management. 	Early stage companies will more likely be successful in bringing health technology tools to market given the excellent support foundation provided by the Health Accelerator.

	BioAlberta, TEC Edmonton, Alberta Innovates, and MEDEC along with other stakeholders will:	WHY IS IT IMPORTANT?
Technology Management Environment enables the effective mobilization, adoption and management of health technology tools.	<ul style="list-style-type: none"> Evaluate the current SCN-MEDEC partnership initiative to co-develop, test and implement health technology tools for a health system need in selected clinical areas in AHS. 	Provides systematic information and knowledge about a current collaborative approach between AHS/SCNs and MEDEC for developing, testing, and adopting health technology tools.
	<ul style="list-style-type: none"> Based on the evaluation results (as above), MEDEC, AHS, BioAlberta and interested stakeholders refine, enhance and support the implementation of this systems approach of bringing new medical devices and health technology tools to clinical practice and the marketplace. 	Alberta has a collaborative model for how medical devices and technologies will be co-developed that is based on excellent science, up-to-date technologies, meets clinical needs, and demonstrates value-for-money.
	Alberta Health and Alberta Health Services are strongly encouraged to:	WHY IS IT IMPORTANT?
Access to Data and Data Analytics enables more effective clinical and administrative decision-making as well as the assessment of health initiative effectiveness.	Accelerate current effort and action on improving the quality and access to health data for research, administrative, clinical, and planning purposes.	Patient and administrative data is the underpinning of excellent decision-making, necessary for new health technology tools to enhance diagnostics and treatment options, and facilitates the assessment of progress for patient and population outcomes.
	<ul style="list-style-type: none"> Alberta Economic Development & Trade is strongly encouraged to: 	WHY IS IT IMPORTANT?
Access to Markets, Supply Chains, and Multinationals facilitates commercialization	Develop, implement, and expand programs to increase the market and export readiness of Alberta medical device companies	Market and export readiness are key to Alberta companies being able to successfully market and sell their products abroad. Programs to assist company management in developing their skills and those of their team would accelerate company growth and progression.

	<ul style="list-style-type: none"> • Develop, implement, and expand programs to facilitate access of Alberta medical device companies to multinational enterprise partnering opportunities 	<p>Multinationals possess the supply chains, regulatory expertise, and capital resources to assist Alberta medical device companies in scaling from technology development to full commercialization. Partnering with them will be a key accelerator of success for Alberta companies.</p>
	<ul style="list-style-type: none"> • Develop, implement, and expand programs to facilitate access of Alberta medical device companies to international markets and supply chains, including supporting company attendance at conferences and trade shows, as well as attracting potential customers to Alberta on trade missions 	<p>Access to international markets and supply chains is vital to the commercialization success of Alberta medical device companies. Being able to access and effectively compete in international markets will accelerate the scaling of Alberta medical device companies from small and medium size to enterprise scale and result in their retention in Alberta.</p>
	<ul style="list-style-type: none"> • Develop, implement, and expand programs to facilitate access of Alberta medical device companies to management mentoring and education 	<p>Access to management mentoring and education is critical to the commercialization success of Alberta medical device companies. Many company executives' expertise is in research and development rather than supply chain development, financing, manufacturing, sales, and marketing. Using domestic and international relationships as well as existing networks (e.g. the A100), Alberta Economic Development & Trade can facilitate companies' access to mentoring and educational opportunities to address general management training as well as the individual needs of particular companies.</p>
	<ul style="list-style-type: none"> • Complement the Investor Tax Credit by establishing investment funds for seed, angel, and venture stages of company growth 	<p>Alberta is home to many small and emerging medical device companies. To grow their businesses to enterprise/international scale, these companies need access to seed, angel, and venture funds, all of which are currently lacking in Alberta. Government initiated investment funds would spur company creation and growth and help foster the growth of private investment within the province.</p>
	<ul style="list-style-type: none"> • Work with the Alberta Enterprise Corporation (AEC) to create a vencap fund in support of life sciences, medical device, and diagnostic technology companies 	<p>Ambitious Alberta companies will have access to the necessary financing to experience accelerated growth. At the same time, this will encourage retention of companies in Alberta</p>

	<ul style="list-style-type: none"> • Improve quality and quantity of investment, partnership, and customer deal flow, attract new investment to Alberta by supporting initiatives to raise the profile of the Province as a choice destination for investment in innovative health technologies. 	<p>A more attractive and higher profile environment will draw the experienced investment capital that will enable Alberta companies to scale successfully, helping to retain innovative small and medium-sized enterprises in the province.</p>
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VALUE PROPOSITION

Accelerating the growth of Alberta's medical device and technologies industry will require stakeholders to commit to cooperation, partnerships, and action on enhancing the overall healthcare innovation ecosystem. Working together and capitalizing on the strengths that each stakeholder contributes sets in motion the opportunity to realize the overall health, social and economic benefits that will be experienced by Albertans.

To this end, making significant enhancements to the healthcare innovation ecosystem that supports accelerated growth brings value to each stakeholder group. More specifically:

For Medical Device and Technologies Industry/Companies, such ecosystem enhancements assist in:

- Leveraging collaborations and partnerships to: obtain a competitive advantage; enhance development and testing of user-needed health technology tools; and engage in marketing of these health technology tools based on solid evidence.
- Increasing opportunities to partner with international companies in the development and testing of new medical devices and health technology tools.
- Developing and/or receiving mentoring opportunities from experienced health technology managers.
- Working with AHS and the user-community, researchers, technology developers, and others to develop medical devices and health technology tools that make significant contributions to addressing unmet needs, quality healthcare, disease prevention, and health promotion.
- Providing start-up medical device and technology companies with connections, collaborators and expertise in key areas that will reduce "failure" rates.
- Improving economic returns on investments made in companies.
- Increasing retention of medical device and health technology companies.
- Developing a critical mass of companies that will attract other companies to locate in Alberta.
- Demonstrating leadership in medical device and health technology development and testing nationally and internationally.

For Healthcare Providers, AHS, Other Provider Organizations, such ecosystem enhancements assist in:

- Engaging, influencing, and participating with companies and researchers in the process of identifying and co-developing needed medical devices and health technology tools.
- Shaping the innovation culture within AHS and creating provider opportunities to be involved in the development process.
- Positioning the health system as an innovative healthcare leader.

For Academia/Researchers, such ecosystem enhancements assist in:

- Generating partnering opportunities in leading edge device and technology development with companies, AHS and the user-community.
- Contributing valuable know-how in research and technology development to health technology companies and to the user community.
- Attracting researchers, post docs, graduate students, and other high quality and entrepreneurial people to Alberta post-secondary institutions.

For Albertans, such ecosystem enhancements assist in:

- Obtaining early access to leading-edge, high-quality diagnostic and treatment care with new and improved medical devices and health technology tools that increase the potential of patients returning back to employment sooner and/or enhance the overall quality of life.
- Increasing opportunities to maintain health and/or to age in-place through new and improved health monitoring devices.
- Growing a more diversified economy with increased employment of highly skilled people.

For the Government of Alberta, such ecosystem enhancements assist in:

- Improving financial returns to the Province.
- Establishing a more stable and diverse economic base that helps to mitigate the impact of fluctuating energy prices.
- Increasing the level of innovation investment from national and international sources.
- Creating an international reputation as the “go-to” place for developing, testing and commercializing new and innovative health technology tools.
- Having a cluster/critical mass of companies and technologies that support the attraction of investment, re-location of companies from elsewhere, and contribute to the innovation culture of Alberta.

MEASURING PROGRESS

While measuring success of the growth of the medical device and technologies industry in Alberta requires a longer-term view, it is necessary to monitor progress regularly and refine the priority actions based on results. Not only must the progress of the proposed actions be assessed, but also the anticipated impact of those actions on the desired future state of the industry. Therefore, the following outcome measures should be considered

Health Related Outcome Measures:

- Population health outcomes.
- Cost savings and cost avoidance in the health system.
- Number of days required for patients to return to active employment.
- Patient satisfaction

Economic Related Outcome Measures:

- Annual revenues generated by Alberta medical device and technologies companies.
- Number of medical devices and technologies launched successfully.
- Number of medical device-related companies attracted to Alberta.
- Successful larger-scale medical device development partnerships from outside Alberta.
- Number of Alberta medical device companies leaving the province.

SUMMARY

Alberta's healthcare system, academic and industrial research and innovation capacity, and its commercialization competence are core strategic strengths that bring value to the social and economic wellbeing of Albertans.

Medical device and technology companies are working to further capitalize on these strengths in order to develop medical devices and health technology tools that meet the current and emerging needs of Albertans and also serve the global community. When all of these participants in the healthcare innovation ecosystem are aligned and focused, and supportive policies and commitments are in place, incredible opportunities emerge to achieve significant population health, social, and economic outcomes.

Specifically, Albertans will have timely access to some of the best health technology tools developed, tested, validated, and commercialized. Medical device and technology companies will benefit from academic and industrial research capacity and capabilities as well as the innovation-inviting provincial health system in the co-development of needs-driven and end-user focused health technology tools. Last but not least, the Province will realize significant economic diversification and growth.

The next five to ten years promise great breakthroughs in medical device and health technologies. Now is the time for governments, academia, and industry to put in place the necessary policies, commitments and aligned actions to realize a thriving medical device industry in Alberta that can serve as a global hub for development, testing and commercializing health technology tools.