

CENTRAL OKANAGAN AEROSPACE CORE COMPETENCIES



Central Okanagan Aerospace Core Competencies

INDUSTRY ANALYSIS

RECOMMENDATIONS

STRATEGY

November, 2017

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1. EXECUTIVE SUMMARY

Aerospace has been identified in Canada's Innovation Agenda as the sector that can lead the way in economic growth. The federal and provincial governments have committed significant programming support and funding to the sector, recognizing the country's capabilities and capacity to produce high-value, innovative aerospace products and services. Canada also contributes more to new research and development spending in aerospace than most other countries. At the time of this report, the Federal Government was considering an application by the aerospace industry to the Innovation Superclusters Initiative. This new federally funded initiative is designed to help strengthen Canada's most promising clusters and accelerate economic growth in highly innovative industries.

opportunity

With approximately 170 aerospace-related companies in British Columbia, the province has the third largest aerospace sector in the country; about 30 of these are located in the Central Okanagan Region. The growing hub of companies in the Central Okanagan is diverse, from communication systems and specialized manufacturers with less than 10 employees, to the region's largest private employer, KF Aerospace with a full suite of in-house capabilities and 700 employees locally.

Additional factors support the potential for significant growth and investment in aerospace in the region: Kelowna International Airport, one of the top 11 airports in Canada in terms of passenger growth is undergoing major expansion. A potential partnership between UBC Okanagan and Avcorp Industries to establish a Learning Factory for Advanced Composites at UBC's Okanagan Campus is breaking new grounds in terms of innovative research, manufacturing and attracting foreign direct investment to the region. The area's diverse terrain supports well-established pilot training programs for fixed wing and rotary aircraft. As well, the region is a highly desirable place to live and work and has the ability to attract skilled talent that the aerospace industry needs.

innovation

The universal challenge facing aerospace companies today is global competition – suppliers of all sizes are affected by international trends and global economic factors. The increased demand for passenger travel, the need for different types of planes as well as lean, green and low-cost fleets present economic opportunities for aerospace manufacturers and service providers who can deliver innovative products to exacting standards. The concept of Industry 4.0 – the integration of a company's physical assets into digital ecosystems to make manufacturing more agile, flexible and responsive to customer demands – is revolutionizing aerospace and many other industries. Hand in hand with embracing the digital culture, innovative companies must consistently invest in new technology and research to become and remain a part of the intensely competitive global aerospace industry.

collaboration

Through over 40 interviews with Central Okanagan aerospace companies, government organizations and industry associations, and extensive secondary research, this study looked at the capabilities of Central Okanagan aerospace companies in relation to the global environment for aerospace. Despite the perceptions of some companies that they are part of an aerospace cluster, the sector regionally is fragmented and lacks the underlying synergies found in true clusters. However, community infrastructure essential to grow the industry has matured over the last decade including a burgeoning technology community, Kelowna International Airport, sophisticated research facilities that invite industry participation at UBC-Okanagan and training provided by Okanagan College in partnership with industry. As companies in the region adopt Industry 4.0 concepts, the potential synergies between the local technology, aerospace and manufacturing sectors may provide the impetus for the development of a cluster *mentality*.

The recommendations herein are aimed at creating cohesion and collaboration within the sector through the development of a cluster mentality. They are recommendations for industry, the COEDC and partners to conduct over the short and long-term in order to strengthen the regional aerospace sector and attract new talent and investment into the region.

Summary of Recommendations:

- ➔ **Encourage the creation of an industry-led association to develop and lead strategies for sector growth.**
- ➔ **Develop aerospace-specific marketing and talent attraction collateral.**
- ➔ **Facilitate networking, thought leadership and business/succession planning sessions.**
- ➔ **Facilitate collaboration between the aerospace and technology communities.**
- ➔ **Facilitate relationships between aerospace companies and local suppliers and fabricators.**
- ➔ **Support the establishment and operation of the Learning Factory and similar initiatives through attraction and retention strategies and tactics.**
- ➔ **Commission a YLW Aerospace Campus feasibility study in partnership with YLW and other regional stakeholders.**

2. INTRODUCTION

Canada plays a significant role in the global aerospace industry, ranking third in terms of global civil aircraft production activity. It is third in terms of R&D intensity, behind France and the United States, and 5th in terms of GDP, behind the US, Germany, France and the United Kingdom. Canadian based companies include major manufacturers such as [Bombardier](#), [CAE](#) and [MDA](#) as well as a growing number of businesses developing leading edge technology in areas ranging from earth observation to advanced design and manufacturing. The significance of this sector is underscored by the Federal Government's consideration of an application by the aerospace industry to the [Innovation Superclusters Initiative](#), a new federally funded initiative designed to help strengthen Canada's most promising clusters and accelerate economic growth in highly innovative industries.

Closer to home, the country's third-largest aerospace sector is in British Columbia with approximately 30 companies located in the Central Okanagan. The latter include the region's largest private-sector employer, [KF Aerospace](#), and a range of smaller, niche providers representing rotary wing, avionics, Maintenance/Repair/Overhaul/In-Service Support (MRO-ISS), data solutions, training and consulting.

In addition to the hub of Central Okanagan companies providing products and services to the aerospace industry, other factors support the potential for growth and investment in aerospace in the region. [Kelowna International Airport](#), one of the top 11 airports in Canada in terms of passenger volume, is undergoing significant expansion with a strong focus on airside and groundside development.

A potential partnership between [UBC Okanagan](#) and [Avcorp Industries](#) to establish a [Learning Factory for Advanced Composites](#) at UBC's Okanagan Campus is breaking new ground in terms of innovative research, manufacturing and attracting foreign direct investment to the region. Integration of technology into aerospace is the predominant industry direction, and initiatives such as the Learning Factory are key to rapid and sustainable growth of the sector. Pilot training is provided for both fixed wing and rotary wing aircraft through several flight schools/institutions. As well, the region is a highly desirable place to live and work and has the ability to attract skilled talent that the aerospace industry needs.

With this foundation in place, the Regional District of Central Okanagan's [Central Okanagan Economic Development Commission](#) (COEDC), with support from Global Affairs Canada's [Invest Canada Community Initiatives](#) program, initiated the Central Okanagan Aerospace Core Competencies study as a means of assessing the region's existing capabilities, competencies and barriers to growth, as well as tactics the COEDC and its partners can employ to foster growth in the sector and encourage foreign direct investment.

3. METHODOLOGY

A combination of primary and secondary data sources were used for this study. The primary research conducted between March and September, 2017 consisted of more than 40 interviews with Central Okanagan aerospace companies, federal and provincial industry organizations and post-secondary institutions that support the sector. In addition, the Consultant attended presentations and networking sessions at two major industry events in August – the [Aerospace, Defence & Security Expo](#), and the [CARIC National Research Forum](#). This primary market intelligence was considered in conjunction with secondary research from resources such as [Canada’s Innovation Agenda](#), [International Trade BC’s Aerospace Sector Analysis](#), and the [Aerospace Industries Association of Canada’s \(AIAC\) Aerospace Innovation White Paper](#). A complete list of resources referenced for this study is provided on page 35.

The Central Okanagan Aerospace Core Competencies study includes three components:

- ➔ [Database](#) of companies, organizations and stakeholders in the aerospace sector including a description of their services and products, R&D capacities, and key contact information.
- ➔ [Industry Analysis & Asset Map](#) providing an analysis of the region’s core competencies, assets, value proposition and alignment with broader industry trends.
- ➔ [Recommendations and Strategy](#) for future development of the sector including initiatives, funding and/or additional supports that should be directed to support growth, and facilitate foreign direct investment in the sector.



4. AEROSPACE INDUSTRY BACKGROUND

Aerospace has a vast economic reach. It attracts talent and investment from around the world to individual communities, contributing significantly to economic growth and development.

The driving force behind aerospace today is innovation. In its 2014 report [Innovation in Aerospace](#), the Royal Academy of Engineering and the Royal Aeronautical Society described the immense contribution the sector makes to innovation:

“Aerospace is widely seen as the instigator of technology change in many fundamental engineering disciplines, including electronics, sensing and communications, the use of new metals, composites and plastics, and the development of new, more efficient and sustainable power and energy systems. . . Aerospace is an important testbed for broader developments in automation, assembly and inspection. Aircraft, seen as highly complex examples of systems and assemblies, present manufacturing challenges that have implications for many other engineering sectors.”

[Canada’s Innovation Agenda](#), which outlines a long-term plan to drive economic growth through innovation, identifies aerospace as the sector that can lead the way. Canada has demonstrated its capability and capacity to produce high-value, innovative aerospace products and services and contributes more to new research and development spending in aerospace than most other countries; over 20 percent of the country’s total gross domestic product goes back into R&D.

The ability to implement innovative practices associated with manufacturing, data management and R&D are paramount to a competitive, sustainable aerospace sector. Next-generation aircraft that are cleaner, quieter and more fuel-efficient are being designed and deployed, and the industry is being reshaped by the integration of digital technologies in all

CANADA’S AEROSPACE SECTOR

- ➔ Canada ranks 3rd globally in terms of civil-aircraft production. Industry revenues grew by close to 20% between 2011 and 2016.
- ➔ In 2016, the industry contributed close to \$28B to GDP and 208,000 jobs to the Canadian economy.
- ➔ 70% of the industry’s activity (GDP) is dedicated to manufacturing while the balance is focused on maintenance, repair and overhaul (MRO).
- ➔ Canadian aerospace manufacturing was the number one R&D investor across manufacturing industries in 2015. The industry invested \$1.9 billion into R&D in 2015.
- ➔ Canada exports more than 80% of its aerospace products.

Source: [Aerospace Industries Association of Canada Industry Statistics](#)

segments from design and manufacturing, to data collection and analysis, to customer experience.

These trends provide significant potential for aerospace manufacturers and service providers. The industry operates on a global playing field, however, and competition is fierce to develop new products and secure sales. From country to country, diverse political strategies affect the degree of funding, incentives, procurement policies and export support available. The globalization of supply chains means that even small niche companies are competing internationally and must demonstrate consistently high performance to ensure long-term supplier relationships. Aerospace is generally a high cost/high risk industry, with a sales cycle that can span many years; challenges with production, delivery and/or performance of even the smallest critical part can be devastating to a company's reputation and future.

Research and development of new or updated systems and components is key in this environment. While Canada invests more in aerospace R&D than any other sector, R&D initiatives are at the same time challenged by the relatively small aerospace market nationwide, and the geography that limits the connection of scientific capabilities and the flow of people and goods from coast to coast.

To address this, both the BC and federal governments have committed funding and programming to continued development of the sector including specific funding to the [Aerospace Industries Association of Canada](#) (AIAC). The AIAC describes access to research expertise and assets, collaboration between industry and researchers, and a common understanding of priorities between aerospace research stakeholders as key to growing the

sector. The aerospace industry led by [CAE](#) has also submitted an application to the federally funded [Innovation Supercluster Initiative](#), which will provide non-repayable funding to strengthen clusters of existing commercial strength. Each initiative that is selected will be led by a partnership of industry, academia and intermediary institutions that can build deep, ecosystem level advantages in regions across the country.



Additional trends globally provide both opportunities and challenges for aerospace

companies today and well into the future:

A. AIRCRAFT MANUFACTURE & DESIGN

Global passenger traffic over the next 20 years is expected to increase dramatically, requiring nearly 40,000 new aircraft valued at \$5.9 trillion (USD). In its 2016 report describing the Aircraft Market to 2025, [Teal Group](#), a major market research firm specializing in the aerospace and defence industry, forecast that commercial aircraft, including regional aircraft, will comprise approximately half of the new build market in 2025 and business aircraft will be the second

highest source of sales.

Military aircraft, expected to be the third highest source of sales, have been increasing as political tensions and military actions create strong demand for combat aircraft and other defence equipment. In the new defence policy released in June, 2017, the federal government increased its defence budget from \$18.9 billion in 2016/17 to \$32.7 billion by 2026/27. The increased funding will be used to modernize the fleets of the Army, Navy and Air Force and make new investments in space and cyber capabilities.

While passenger travel continues to increase, there has been a change in types of aircraft being ordered to fulfill this demand. Orders for large aircraft such as the Boeing 747 and Airbus 380 are down. This reduced demand for the 747 is due to the age of the platform and in the case of the A380, due to saturation in the Middle East market. Conversely, demand is growing for single-aisle aircraft such as the Boeing 737 and the Airbus A320, and [Bombardier](#), in its [Market Forecast for 2017-2036](#), predicts significant growth in the 60-150-seat segment with over 12,000 deliveries forecast over the next 20 years. This demand is being driven by multiple factors such as replacement of aging fleets, optimization of airline networks, and the opening of new routes.



The pursuit of lean, green and low-cost fleets is ongoing; online science, health and technology magazine [BBC Future](#) reported that the latest generation of airliners is between 60% and 70% more efficient than those built 60 years ago. The use of lightweight carbon composites in the airframe, improved aerodynamics and continuous improvements in engine turbine technology are considered major reasons for improvements in aircraft performance.

While development of efficient technologies continues, airlines are having to balance the capital required to acquire next-generation aircraft with fuel costs, which represent the largest operating cost for airlines. Current low fuel prices are having an impact, with some airlines delaying purchases of newer, more efficient fleets. However, the World Bank, OPEC and the [US Energy Information Agency](#) forecast that oil prices could rise to between \$80 and \$100 per barrel by 2030, which may influence airlines to retire aging, less efficient aircraft.

The ability to capitalize on the market opportunities for aerospace companies will depend on various factors, including their ability to modernize their production processes for greater efficiency, innovation and competitiveness. Companies with contracts in place that span a number of years may be less likely to invest in new technology and research, however for

companies willing to make such investments in modernization, the opportunities could be considerable. For example, the increasing use of composite materials in aircraft will require more composite repair facilities, none of which currently exist in western Canada.

B. DIGITIZATION

The concept of **Industry 4.0**, often referred to as the Fourth Industrial Revolution, is frequently used in describing the reality facing all manufacturers that wish to remain relevant in a quickly changing technological landscape. Industry 4.0 is the complete digitization of all of a company's physical assets and the company's integration into digital ecosystems with its value chain partners. Ultimately, the use of digital technologies is used to make manufacturing more agile, flexible and responsive to customers.

“Digitization isn’t optional. It’s essential to stay competitive, and it’s key to securing growth and competitive advantage in a cutthroat global market.”

*Mathew Wetmore,
Canadian Industrial Product Leader, PwC*

Digitization, including big data analytics, the “Internet of Things” and cyber security are revolutionizing aerospace and many others industries. Digitization is profoundly affecting the design, construction, delivery and repair processes associated with aerospace manufacturing as well as the customer experience around air travel. Compared to using digital technology in conjunction with older legacy technology, fully digital systems can be used for everything from improving engine efficiency to mobile tracking solutions. For example, a jet engine built with digitized engine health monitoring solutions on big data platforms can provide in-depth data information that can be used to predict the demands of the engine under various conditions and reduce fuel consumption, engine noise and emissions.



Digitization will also dramatically transform the airline travel experience with complete integration from the time the customer begins the ticket purchase to the time they reach their destination. Systems that handle ticket bookings, check-in and baggage handling, security, hospitality and in-flight entertainment will all be connected leading to a seamless travel experience.

Airports with fully digital systems could potentially connect to a smart city infrastructure where airlines, retail establishments, hotels, rental car outlets and cargo companies are integrated to deliver services when passengers need them. Internet-connected devices across the airport's platform will provide an alert that a system is

down or malfunctioning and generate an automated service request for a technician to fix the

problem, minimizing flight delays and other inconveniences for passengers. Munich, Singapore Changi, Indianapolis International, Edmonton International, Dusseldorf and Geneva have been identified by travel website [Traveller24](#) as among the world's most tech-savvy airports.

The impact of these technology-driven changes were described by Boeing Co's president and CEO, [Dennis Muilenburg](#) in 2015 when he referred to Amazon and Facebook as "emerging competitors in the aerospace industry... Such companies could also emerge as business partners provided new global collaboration models are developed around the industry." In its [2016 Global Industry 4.0 Survey](#), Price Waterhouse Coopers LLP (PwC) pointed out that industrial companies' average level of digitization is expected to rise from 33% to 72% within five years. "Digitization isn't optional," wrote PwC's Canadian Industrial Products Leader, Matthew Wetmore. "It's essential to stay competitive, and it's key to securing growth and competitive advantage in a cutthroat global market."

Innovations in aircraft technology are transforming the sector, from the integration of new software to the constant development of automated processes. For aerospace companies that are innovative in harnessing and adapting new technologies, digitization provides the opportunity to significantly reduce costs and increase revenues. The greatest challenges around this process are building a digital culture and finding the highly educated workers with the necessary skills to apply digital technologies.

Additional factors that provide both opportunities and challenges for the Canadian aerospace industry today and well into the future:

C. SAFETY AND SECURITY

Aerospace is a "high trust" industry, from the performance of a precision-made part to a split-second decision by a commercial airline pilot. Since the catastrophe of September 11, 2001, ensuring safety and security through implementation of new security processes and equipment have made the industry more complex and expensive to invest. At the same time, a perceived lack of safety by the public can significantly alter travel patterns and devastate industry players.

D. SHORTAGE OF SKILLED WORKERS

The need for pilots and skilled workers in aerospace throughout Canada and the world represents large numbers of well-paying jobs. At the 2017 Paris Air Show, the [CAE](#), a global leader in comprehensive aviation training, predicted 255,000 new pilots will be needed globally over the next 10 years, and a recent study by [Boeing](#) predicted 617,000 commercial airline pilots will be needed by 2035. There is a major shortage of talent, however. CAE says more than half the pilots needed in the next decade have not started their flight training. A Kelowna-based carrier reported that of the 26 pilots that resigned in 2016 and 2017, 77% left to work for major airlines, and 23% left to work as corporate or private pilots.

While the pilot shortage would seem to present opportunities for growth for institutions

offering training, systemic issues such as lack of instructors, the high costs of equipment and training, and restrictions in larger urban regions on airspace usable for trainees, are impeding the ability for flight schools to grow. This is compounded by the low wages for new pilots, which reduces the number of new recruits entering the industry.

The pilot shortage is affecting both the number of routes flown and the type of aircraft being deployed. In the US alone, [Travel Weekly](#) and other publications have reported on the large number of airports that have lost service partially or completely since 2013. Airlines are also moving to larger regional jets (within the small regional jet category) to cope with pilot shortages.

Pilots are not the only area where there is a lack of skilled workers. In its [2016 Aviation and Aerospace Industry Labour Market Information Survey](#), the Canadian Council for Aviation & Aerospace (CCAA) determined 42% of respondents face immediate and persistent recruitment challenges when hiring the skills they need. Recruitment challenges were concentrated in managerial, technical and skilled trades occupations which require industry-specific skills; these include flight engineers, flying instructors, air traffic controllers, mechanics and related occupations. Most companies said they had a low attrition rate and that they do not experience chronic problems in retention, however they expect retirements over the next year may pose labour challenges for them, especially if new hires lack industry and company-specific skills.

Another challenge for employers in finding the skills they need relates to emerging technologies; employees need experience and competency with the new software and programs being used to operate old machinery, as well as new hardware used in advanced manufacturing.

E. TRADE CHALLENGES

Political factors can be a significant risk in this highly competitive global industry. It is not uncommon for governments to financially support new aerospace programs or platforms because of the strategic importance of the aerospace industry, in conjunction with high R&D costs and long development cycles. This can lead to trade disputes between countries as evidenced by the current dumping claim by Boeing that Bombardier sold its C-Series aircraft to Delta Airlines at a price well below its cost. The countervailing duty has the potential to scuttle the \$6 billion deal, which will negatively impact the industry in countries other than just Canada.



AEROSPACE INNOVATION WHITE PAPER

In its 2016 [Aerospace Innovation White Paper](#), the AIAC outlines its long-term vision for sustainable aerospace in 2025:

“In 2025 aerospace will be relying on a strong scientific, technological and entrepreneurial culture with a dense network of highly competitive SMEs, from coast to coast. Aerospace innovation will be fostered by close collaboration between all stakeholders, including businesses, universities and colleges, research and technology organizations, governments and their agencies. Aerospace competitiveness will be linked to its ability to contribute to the greening of aviation. Aerospace will also contribute to the strengthening of Canada’s brand, representing one of the most attractive high technology sectors for young to engage in, with strong professional STEM prospects for an increasingly diverse workforce.”



Contribution to GDP, job creation, and exports are considered ultimate outcomes for a sustainable aerospace innovation policy. The White Paper describes potential growth for the sector by the following indicators and targets between 2016 and 2025:

- ➔ Canada’s aerospace sector contributes over \$28 billion in GDP to the national economy each year.
2025 Target: \$ 37B to GDP
- ➔ Over 208,000 Canadians are employed in the sector.
2025 Target: 255,000 jobs
- ➔ Canadian aerospace manufacturing exports represented over \$15B in 2016.
2025 Target: Aerospace manufacturing exports represent more than \$28B.

5. BRITISH COLUMBIA'S AEROSPACE SECTOR

British Columbia is the location of 170 aerospace companies representing the third-largest aerospace sector in Canada after Quebec and Ontario. Aerospace in BC generates \$2.4 billion in revenue annually and directly employs more than 8,000 people.

A diverse network of manufacturers, technology providers and education and training resources have earned BC a reputation for delivering excellence in specialized products and services. The province is home to many niche companies engaged in pilot training, rotary aircraft and special mission aircraft MRO and MRO-ISS work including [MTU Aero Engines](#), [Conair](#), [Cascade Aerospace](#), [Viking Air](#), [Heli-One](#), and [KF Aerospace](#) and several smaller players located in the Central Okanagan.

BC aerospace companies and suppliers have several advantages. BC is located in a geographic position close to the [Boeing](#) final assembly line in Washington State. Being located on the Pacific coast also provides access to the Asia Pacific aerospace market, which is thriving. BC offers significant capabilities in the area of aviation training. It attracts large numbers of international students training to be pilots, and its diverse terrain and resource-based industries provide an ideal location for specialized training such as air rescue and fire suppression. BC also has strong capabilities in the supporting services sector including aerospace IT and simulation software.

The significant shortage of pilots and other skilled aerospace workers is a challenge for British Columbia and the rest of the country. The need for pilots has hit small regional airlines hard as national airlines attract new recruits when they are still in flight school with higher wages and the opportunity to move through their careers quickly. New regional airlines have opened in the province, adding to the competition for pilots.

In recognition of significant potential for continued growth and development of the aerospace sector, in 2014, the provincial government announced \$1 million in funding for the BC aerospace industry through [AIAC Pacific](#) – the first of a \$5 million commitment over 5 years. Several national organizations with provincial representation provide support for the collaboration of researchers, government and industry, which improves knowledge transfer from academic institutions to industrial applications.



These include the [Consortium for Aerospace Research and Innovation in Canada](#) (CARIC), the [Strategic Aerospace and Defense Initiative](#) (SADI), the [Technology Demonstration Program](#) (TDP) and the [Aerospace Industries Association of Canada](#) (AIAC).

The **AIAC** has identified the following specific requirements for BC to optimize its potential for aerospace development:

- ➔ **Identify key “anchor firms”** around which robust aerospace sectors can develop;
- ➔ **Promote better synergies** between government, companies and academia to complement and develop clusters;
- ➔ **Capitalize fully on niche areas of expertise** such as aviation training, rotary and special mission aircraft;
- ➔ **Adopt international best practices and strategies** used in Eastern Canada to incentivize and promote aerospace activities, skills and training; and continue the renewed focus on marketing British Columbia within the broader Canadian context, as an excellent location to invest in aerospace.

**BRITISH
COLUMBIA IS
A CANADIAN
AEROSPACE
LEADER**

- ➔ British Columbia is the third largest aerospace sector in Canada with more than 170 companies engaged in aerospace in the province.
- ➔ BC leads the country in the number of Maintenance, Repair and Overhaul (MRO) providers as well as the In-Service Support (ISS) sector.
- ➔ Aerospace in BC employs 8,300 British Columbians directly and supports another 14,300 to 19,800 jobs indirectly.
- ➔ The sector generates \$ 2.4 billion in revenues and \$ 1.3 billion in GDP annually.
- ➔ The province’s MRO-ISS sector is the largest in Canada and makes up approximately 30% of the overall BC aerospace sector.
- ➔ BC is a world leader in forest fire fighting, search and rescue and film aircraft, creating a niche capability which is heavily exportable.

Source: AIAC Pacific

In summary, the bar which BC aerospace companies must reach or exceed in all facets of their organizations to compete globally reflects the most rigorous, exacting standards. At the 2017 ADSE conference in Abbotsford, BC, Keith Day, Executive Chairman of Vancouver-based [Wesgar Inc.](#), a manufacturer of customized sheet metal products, described how his company changed when it realized it lacked the “wow factor” that its target customers were looking for:

“As many of our customers were bought up by other companies, we realized the larger companies wanted suppliers with robust systems, extensive experience and who could provide absolute assurance of on-time delivery. We made some changes. Now we have a comprehensive business plan with a clear vision statement. Our managers meet with individual employees regularly and we are always looking for ways to improve. To be part of the aerospace supply chain today you have to show you are innovative and a dynamic, unique supplier.”

Keith Day, Wesgar Inc.



6. AEROSPACE IN THE CENTRAL OKANAGAN

A. REGIONAL COMPANY INTERVIEWS

The Central Okanagan companies interviewed for this study are diverse, ranging from aerospace consulting and custom CNC machine shops with less than 20 employees, to companies with in-house manufacturing, design and training capabilities and hundreds of employees. Specific products and services represented include:

- ➔ *Aircraft audio communication equipment design, development and manufacture*
- ➔ *Aviation consulting*
- ➔ *Design and manufacture of communication systems and products for special role aircraft*
- ➔ *Rebuild of small out-of-production private/hobby aircraft*
- ➔ *Overhaul of hydraulic flight controls and cargo hooks and suspension systems for helicopters*
- ➔ *Composites materials distribution*
- ➔ *Pilot training (fixed and rotary wing)*
- ➔ *Helicopter services for the resource, law enforcement, medical, search and rescue, and tourism industries*
- ➔ *CNC custom machining*
- ➔ *Custom steel and aluminum parts manufacturing*

The interview process consisted of one-on-one discussion with individual business owners/managers to identify core services and capabilities, competitive advantages and barriers to growth.



The following section identifies themes, issues and distinguishing factors of the aerospace environment in the Central Okanagan.

B. ECOSYSTEM AND DRIVERS

i Infrastructure

a. Kelowna International Airport

Kelowna International Airport (YLW) is a driver of aerospace growth and development in the region. One of the 11 busiest airports in Canada, it brings significant profile to the entire Okanagan and access to business hubs through the number of direct and in-direct flights transporting tourism and business travelers in steadily increasing numbers. YLW's **Master Plan to 2045** includes considerable focus on airside and groundside development, providing opportunities for current tenants to grow and accommodation for future tenants.

YLW has been an early adopter of innovative technology and piloted several practices aimed at optimizing the passenger experience and improving operational efficiencies. These include body scan technology and faster processing of passengers during pre-boarding, the use of biometrics in passenger ID systems, and tracking passenger preferences through Wi-Fi technology. As a Tier 2 airport, YLW has the capacity and desire to collaborate with aerospace and technology product and service providers in the region as well as research facilities such as **The Learning Factory**.

YLW's vision for the future includes the concept of a groundside **"Aerospace Campus"** which, in addition to providers of aerospace products and services, would include a public education component that highlights the history of aerospace in the region, research taking place, and community-oriented programs such as the **Kelowna Flying Club**. Additional opportunities may lie with short-term pilot training programs for specialty aircraft such as the **Cessna Cirrus**; such training currently doesn't exist in Canada and could provide economic benefits by bringing pilots and their families to the area while the pilots undergo training.



b. KF Aerospace

Due to the size and wide range of products and services produced by **KF Aerospace**, it is widely seen as the sector’s anchor company in the Okanagan Valley by other aerospace companies, industry groups and government. Started as Kelowna Flightcraft in 1972 by two local entrepreneurs, KF Aerospace has grown to over 900 employees nation-wide providing corporate, commercial and military services to companies internationally. With its head office in Kelowna, KF Aerospace has significant impact on the Central Okanagan economy, attracting skilled talent and profile to the region. In the words of one local MRO firm, “KF is the chief in the region.”



c. The Learning Factory for Advanced Composites

The Learning Factory for Advanced Composites is a joint initiative between the University of British Columbia, the **Composites Research Network** and the **Avcorp Group**. The consortium is exploring the development of a commercial production facility of composite aircraft parts in an environment that will collect sensor-based data to develop computational models of the composite manufacturing process.

Composite parts are essential for new-generation aircraft but the complex manufacturing process that generates them suffers from poor yields and high production costs. Integration of sensors and digital technologies into the manufacturing process will identify improvements in the manufacturing process that will increase yields and reduce costs of these critical parts. The data collection and analysis technologies that could be developed in The Learning Factory are anticipated to have applications in other processes (e.g., additive manufacturing) and other industries. The Learning Factory is garnering significant global interest from major players in diverse industries.



ii Trends and Challenges

a. The Region is Home to Many Smaller Companies Challenged by Succession and Planning Issues.

Small entrepreneurial companies dominate the Central Okanagan aerospace sector while a few larger companies provide the greatest percentage of employment. Of the companies interviewed:

➔ 55% had 10 or less employees (full and part-time)	Total 51
➔ 25% had between 15 and 20 employees	Total 63
➔ 20% had between 70 and 600 employees	Total 894

The approximate number of full and part-time employees represented by this study is 1,008.

With the majority of companies falling within the Federal government definition of small business (under 100 employees) including some “micro businesses” (1-4 employees), many of the themes and trends are typical of companies in all sectors in an environment where small business dominates.

Approximately half of the companies interviewed were started in the Okanagan and in many cases the founder remains involved in the day-to-day operation of the company. Several of these business owners worked for other aerospace companies before starting their own ventures and their competitive edge lies in the principals’ extensive industry knowledge and experience. The majority of these individuals are within 10-15 years of retirement. While their background and expertise helps attract new business, there is general concern by the companies about how to replace this expertise when these individuals retire.

As in many industries, the business operators that transitioned from working for larger companies to starting their own business indicated they have struggled with managerial issues such as the need for formal business planning and delegating responsibility. There is a sense smaller companies are frequently trying to find a balance between how much money and time to invest in new equipment, technology and additional staff, making sales, and identifying a competitive price point for their products and services.

b. A Number of Niche Service Providers Finding Market Sweet Spot

At the same time, the region is home to innovative niche service providers which, although they may have less than 10 employees, they have strong employee teams; the employees have worked together for some time and reflect a “lean and mean” work environment that allows the company to be responsive and flexible in meeting customers’ needs. The more forward-thinking companies have adapted their capabilities and marketing strategies to diverse industries including aerospace – some fabrication shops for example – to ensure diversified, consistent work.



Not all the smaller companies want to grow, however; several said they were content with the business on their books, having found a loyal, steady base of customers that trust them to supply consistent, reliable service and quality products. This attitude was exemplified by a business owner who said, “We are happy with our niche and just doing our thing.”

c. Recruitment and Retention is a Major Challenge

The global shortage of pilots is evident among several Central Okanagan companies and flight training schools. The proprietor of one flight school felt increased security processes have “put a door between the cockpit and the cabin,” closing off communication and interaction with the public literally and figuratively. “There is less passion around the industry for pilots and more fear around air travel, making it a less attractive career environment.” A common theme among many of the companies interviewed was that the high cost and time required for pilot training is also a deterrent to youth pursuing the profession.

Other management positions, including Mechanical Engineers, Quality Assurance Managers and Sales Representatives were also mentioned as hard to fill.

Discussions with smaller companies suggest often they can’t afford the higher wages larger more established companies can offer; the Okanagan’s appealing lifestyle factors are often used to attract new hires from outside the region. Several companies cited examples of finding the right employee, but the candidate declined the job due to the cost of housing compared to where they were moving from. Lack of appropriate work for their partner was another deterrent mentioned.

d. Marketing Strategies Limited, Varied

Marketing for the majority of companies consists of relationship-building, word of mouth referrals and maintaining a reputation for quality products and excellent service. Most companies said their website was a valuable resource when potential customers were researching their capabilities; a few small operators did not have a website. Larger companies are more likely to bid on nationally posted RFPs and implement targeted marketing strategies to specific customer groups.

In small, growing companies, the owner or a partner is often responsible for sales and other areas. Given the significant investment required to hire a dedicated salesperson, it can be

difficult to determine the tipping point where the investment in hiring a salesperson is appropriate. Those that did have a sales representative on staff or representation in key markets stressed the value of this role, but also said finding the right person with the necessary skills and industry background was difficult.

e. Need for Greater Knowledge of, and Access to Industry Support

The need for ongoing working capital due to the long sales cycle associated with the industry and lack of government incentives and funding were mentioned by most companies as barriers to growth. These same companies often indicated they lacked the time and inclination to research what government support might be available. “We know there is funding out there, but don’t have the time to do the research. If we just had someone to call who could help us narrow down the search and access the opportunities available.”

The value of industry organizations that provide support to the aerospace sector was not perceived as strong among the businesses interviewed. Small business operators weigh the value of attending industry events outside of the Okanagan against the required cost and time away from their businesses to attend. “We are just a little Okanagan company,” said one supplier. “When I go to industry conferences in Vancouver, I’m a small fish in a big pond.”

In addition to the above, the need for increased services and accessibility, as well as processing times through [Transport Canada](#) was a major issue expressed by Central Okanagan companies.

Research and development is currently minimal in the Central Okanagan aerospace sector. As described earlier, many of the smaller players are focussed on achieving sales, production and delivery. Despite the opportunities associated with facilities such as the University of British Columbia Okanagan’s [Survive and Thrive Research Initiative \(STAR\)](#), the majority of operators interviewed had little or no knowledge of these resources.

f. Limited Input from Rotary Wing Operators

A sizeable contingent of rotary wing (helicopter) companies are located in the region offering a range of services, from repair and maintenance to pilot training and charter tours. Only a few of these companies could be reached for an interview and more research into the capabilities of the region’s rotary wing sector may be warranted.



Among the trends that were noted, medical service and search and rescue work opportunities have increased for helicopter firms and help offset less work available in the oil and gas industry. It was mentioned that the recent impact of floods and fires in BC has been an important source of work for rotary wing service and maintenance providers. Helicopter companies are also tapping into the tourism industry by providing corporate, wine and heli-skiing tours.

C. AEROSPACE DEVELOPMENT IN THE CENTRAL OKANAGAN WOULD BENEFIT FROM A CLUSTER MENTALITY

The term “cluster” is frequently used in reference to the number of aerospace companies located in close proximity in the Central Okanagan.

The concept of a business cluster was introduced by global economist [Michael Porter](#) in 1990 and has dominated economic development policies around the world. In simple terms, a cluster is a geographic concentration of interconnected businesses, suppliers and associated institutions in a particular field. When there are sufficient resources and competencies collectively to reach a critical threshold, the cluster has a key position in a given economic branch of activity, and a sustainable competitive advantage over other places. The strictest criteria to define a cluster takes into consideration a wide range of data including [NAICS](#) codes, incomes, employment growth, labour force demographics, educational attainment, and occupational structure. The Porter theory allows that some industry groups may fall short of the criteria but still be referred to informally as “clusters” or having cluster potential.

Clusters provide a link between entrepreneurship and innovation. In a positive cluster environment, the companies employ sophisticated production methods, use advanced technology, and offer unique products and services. The environment must also include such factors as “a high quality of transportation infrastructure, sufficient numbers of skilled employees, efficient regulatory processes and reasonable corporate tax rates.”

Cluster development is cited by the federal and provincial governments as key to development of the aerospace sector. The BC government, in its Aerospace Sector Analysis, says the province “has most of the components of an aerospace cluster, but as comparison with competitor countries shows, would need a much more concerted engagement between government and industry to develop this cluster in a way that keeps pace with global trends...”

The companies interviewed for this study were asked if they saw themselves as part of an aerospace cluster. Most said they did see themselves as part of a local cluster or group of companies in close proximity working in and around the aerospace industry but an underlying attitude of protectiveness and competition was evident. Several businesses said they engage in networking within the industry – “We all know each other” – but acknowledged they “keep some cards close to the vest, especially when it comes to disclosing new target markets.”

Virtually all the companies interviewed felt that shipping in and out of the region was excellent, from overnight air transportation to ground transport of engines and heavy equipment. As discussed earlier, a shortage of skilled workers was frequently mentioned which challenges the cluster potential. Regulatory processes affecting aerospace are considered complex and cumbersome by the majority of companies interviewed, and a lack of support from government

to help aerospace companies compete globally was expressed.

Collaborative R&D activity within aerospace companies and/or in conjunction with post-secondary institutions is minimal but growing in the region. A notable exception is a manufacturer that was fully engaged in research and development for its first five years in operation until it brought its own products to market in 2017.

Many companies said they knew there were other suppliers to the aerospace industry in the region but had limited understanding of their products and services. Most were receptive to the idea of being included in the database that is part of this study, however when invited to provide brief listing information, almost half the companies did not provide information.

As has been noted, aerospace is a globally competitive industry and for the aerospace sector to grow significantly in the Central Okanagan, it is critical that a cluster mentality be developed. The recommendations that follow include specific initiatives and strategies that the COEDC and its partners can facilitate in the short and longer term to build on the advantages of the region's entrepreneurial environment and significant capabilities by incorporating a more collaborative approach to business and innovative practices and processes. Ultimately this will create a sustainable aerospace sector that continues to attract new investment and essential talent through its ability to compete in the global marketplace.

Despite the perception of some companies that they are part of an aerospace cluster, the local industry is fragmented and lacks the underlying synergies found in clusters. That said, the intersection of a burgeoning technology community in the Okanagan, with the rapid integration of technology in aerospace, may provide opportunities for forward-looking companies. As Industry 4.0 concepts are adopted, the potential synergies between the local technology, aerospace and manufacturing sectors, may provide the impetus for the development of a cluster mentality.

OKANAGAN PARTNERSHIP SOCIETY

Cluster development was an area of focus for the Okanagan Partnership Society between 2003 and 2007 as it developed strategies to enhance the regional competitiveness of the Okanagan on a global scale.

Aviation was identified as one of six cluster groups with considerable growth potential based on number of people employed in the sector.

The Society pointed out that, "Clusters only take shape and grow in regions where they can find advantages for their operations – the more responsive to their needs, the better.

"A region that is able to create advantages in workforce preparation, in generating innovation, in supplying finance, transportation, energy and water, efficient regulation and administration and provide a high quality of life will form, expand and attract more companies around specific clusters."

What does it take to grow an aerospace cluster?



Mississauga, Ontario's aerospace cluster is the largest in Canada by employment and number of businesses.

- Aerospace sector directly benefits from location of Toronto Pearson International Airport in Mississauga
- Over 27,000 people are employed in more than 320 aerospace companies
- 78 airlines
- 34 aerospace manufacturing companies
- 123 service companies to aerospace manufacturing
- Business costs in Mississauga are among the lowest of all major cities in Canada
- Pivotal location for distribution of products and logistical and transportation requirements
- Less than a 90-minute drive to US border – Canada's major aerospace export market
- Fibre and optic communications infrastructure among the best in North America
- Home to a strong creative class of scientists, technicians and engineers that build technologies and innovations used globally
- 6 colleges and 4 universities within commuting distance, over 31 aerospace-related programs

CLUSTER DEVELOPMENT STRATEGY UNDERWAY AT KELOWNA INTERNATIONAL AIRPORT

In the Strategic Plan for the development of Kelowna International Airport's Master Plan to 2045, a new model for the airport's development is described which differs from traditional approaches:

"Airports are taking on features of metropolitan central business districts or commercial nodes, increasingly operating as points of multimodal surface transportation convergence with surrounding office, hotel and commercial facilities....

The Strategic Plan for Kelowna International Airport brings together traditional aviation cluster development and land uses with emerging commercial clusters, introducing new landside commercial land uses in a synergistic manner so that future airport development will be economically efficient, aesthetically pleasing, and socially and environmentally sustainable."

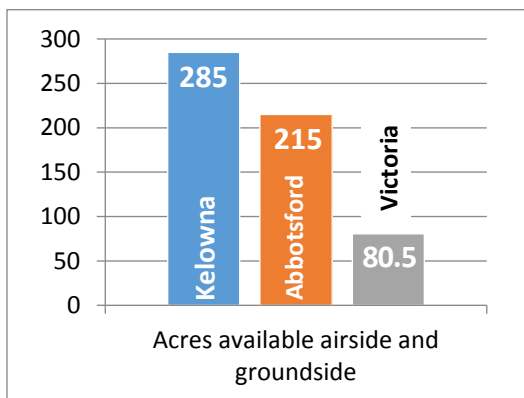


A Tier 2 (medium-sized) airport, YLW today is the 11th busiest airport in Canada by passenger traffic. It is home to an established aerospace community including KF Aerospace, Kelowna's largest private sector employer. The airport terminal is undergoing major expansion, including restaurants, retail and proximity to an additional prime retail/commercial hub at nearby Airport Village as well as UBC-Okanagan and Four Points Sheraton. YLW is already a significant economic generator for the Okanagan region, and the following goals for the continued implementation of its Master Plan to 2045 underscore its role as a catalyst for long term cluster development:

- **Develop an airport worthy of the second busiest international gateway to the province of British Columbia**
- **Develop an aerospace business park** – to leverage the current aerospace industry cluster of businesses and the desirability of the location for employees.
- **Creation of Business Opportunities** – to make YLW and its environs the centre of a business, retail and transport hub to respond to the needs of users, providing economic impetus for office parks and landside commercial developments.

- **Tourism Focus** – to make the Kelowna International Airport terminal an attractive facility for inbound tourists to the Okanagan Valley by providing unique terminal facilities, services and theming that caters to year-round tourism traffic with emphasis on the winter ski market and summer leisure traveler.
- **Maximize Airport Based Employment Opportunities** – to maximize total on-Airport employment and business growth, without compromising aviation operations, and
- **Respond to the Needs of Users** – grow aviation and non-aviation development in response to the needs and market demands of airport tenants and operators, the regional business community and the general public.

Acres Available Airside and Groundside



Kelowna International Airport, Abbotsford International Airport and Victoria International Airport, all Tier 2 airports, are among the **20 busiest airports in Canada in terms of passenger traffic** (2016). YLW has been acquiring considerable land over the last several years as part of its Master Plan to 2045 with 285 acres available for development.

AEROSPACE CLUSTER DEVELOPMENT - A CASE STUDY



The ***Inland Northwest Aerospace Consortium*** (INWAC) is an example of what can be accomplished when diverse aerospace businesses and organizations work collaboratively to provide global customers with a single point of access to a broad spectrum of aerospace-certified suppliers and products.

The evolution of the INWAC regional alliance as it exists today was not a straight path, points out Greg Konkol, INWAC Chair for 2017. The organization was formed in 2002 when a group of companies located along the I-90 Corridor from Central Washington state across Idaho to Central Montana worked with economic development agencies, post-secondary institutions and industry training facilities to form a non-profit membership-funded organization that would enable members to better market themselves to global aerospace customers.

“Initially the focus was on education and training, and while we stirred up quite a bit of interest, as an organization we weren’t effective,” says Konkol. “We went through a sorting out process and defined who we were and who we were not. As individual businesses, we had to get past the fragmentation and somewhat competitive nature of the industry to develop trusting relationships and see how we could engage with each other. INWAC today is industry-driven while still maintaining important relationships with airports, economic development and education/training facilities.”

The INWAC Capability Matrix, available on its website, clearly identifies the capabilities available through the INWAC network, from engineering and prototyping services to precision machining, fabrication, coating and finishing. Members share best practices, develop strategic partnerships and are represented at major industry trade shows with access to additional marketing through INWAC’s newsletter, website and other social media. Project integration and management services enable INWAC to successfully tackle everything from single component orders to complex assemblies.

“INWAC is definitely on the radar of the world’s major Tier 1 manufacturers and has been an important part of the growth of the aerospace industry in the Inland northwest,” says Konkol. “We could never achieve as individual suppliers what we have been able to achieve collectively.”

7. OPPORTUNITIES AND RECOMMENDATIONS

In 2007, the Okanagan Valley Economic Development Society commissioned a study of the Okanagan Valley aerospace industry including a survey of the companies in the region and their core competencies. In the 10 years since that report was published there has been little substantive change in the industry. While the makeup of the companies has not changed significantly, *industry trends combined with maturation of local academic institutions and the technology sector give rise to potential opportunities for significant growth and foreign direct investment.* Realizing these opportunities requires a confluence of catalysts as well as a proactive local industry. In parallel with these larger opportunities, organic growth can be encouraged through coordination between regional organizations and industry.

As noted above, cluster development is recognized as key to the growth of the aerospace sector. Successful cluster development relies on underlying support infrastructure and (typically) a critical mass of a variety of companies and organizations where synergies exist or can develop. *The Central Okanagan aerospace industry is currently too small and too fragmented to be recognized as a cluster, but a core group of organizations is present here, and the opportunity may exist to help develop a “cluster mentality” to promote sector growth.* The COEDC in concert with industry stakeholders is well-positioned to facilitate cluster promotion if industry actively participates.

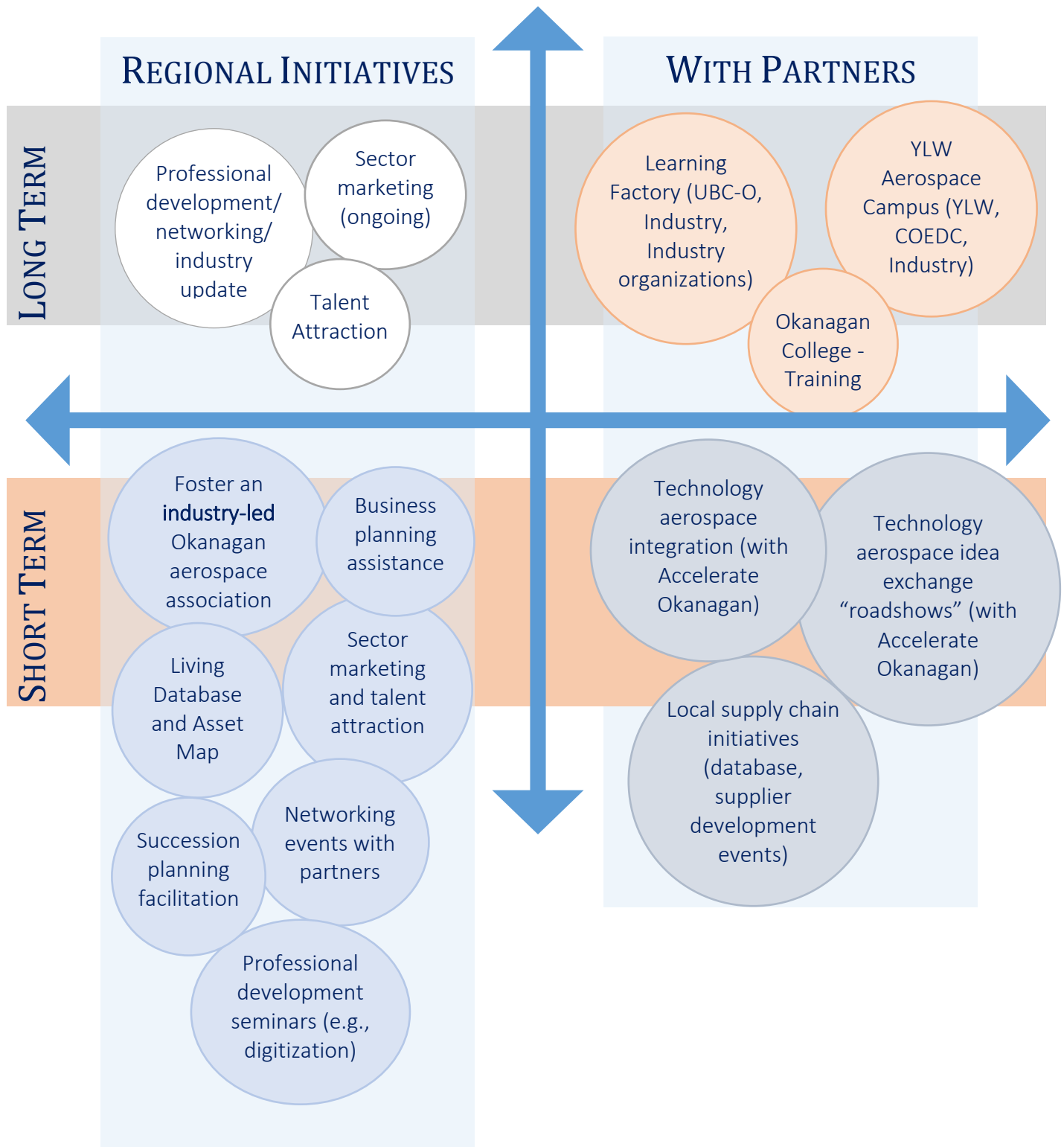


The Central Okanagan is home to an estimated 30 companies directly involved in the aerospace sector, 20 of which participated in interviews for this study. Like many of the manufacturers outside of the Lower Mainland, their location is a result of lifestyle choices and not necessarily a strategic decision based on economic or geographic advantages. At the same time, the Central Okanagan’s proximity to the

Pacific Northwest aerospace corridor, its ideal climate for the manufacture of composite parts and its burgeoning technology sector, offer potential benefits that align well with the major growth opportunities in aerospace (advanced manufacturing and the integration of digital technologies).

The opportunities identified and recommendations made herein are summarized in the Opportunity Matrix, which maps out short and long-term opportunities, and those which can be facilitated directly by the COEDC (with active participation of industry), and those where collaboration with external partners is required.

A. OPPORTUNITY MATRIX



B. REGIONAL INITIATIVES FACILITATED BY COEDC

The overarching theme for COEDC-facilitated initiatives is *the encouragement of a cluster mentality* within the industry. This requires stakeholder buy-in and champions from industry to own and drive the initiatives on a sustainable basis. The COEDC is uniquely situated *to facilitate* events, marketing and talent-attraction campaigns in partnership with stakeholders. Organic growth within the incumbent industry requires a non-siloed outlook and a collaborative approach to sector development. This includes companies directly involved in aerospace as well as potential supply chain partners such as fabricators and machine shops.

Initiatives could include:

i Support/foster an industry-led Okanagan aerospace association.

While AIAC Pacific represents the industry on a province-wide basis, the Okanagan would benefit from a regional organization that can work in concert with AIAC Pacific on larger initiatives, yet be focused and nimble enough to develop programs and pursue opportunities that align with local needs. The association should have the capacity to hire an executive director who would support the association in several capacities including grant and opportunity identification, lobbying, and Okanagan industry representation. Membership would consist of companies directly involved in the aerospace sector, supply chain partners, consultants to industry, YLW, and the University of British Columbia Okanagan, and Okanagan College. The COEDC could assist with the development of the association in the short term, but it must be stressed that to be successful, ultimately such an association must be owned and driven by industry and other member organizations.

ii Sector marketing and talent attraction.

The COEDC has developed a variety of assets for industry and talent attraction. These materials can be modified to be aerospace specific to build both local awareness of the industry and its players, as well as recruitment tools for companies and talent. It should be noted that creating awareness of the Okanagan aerospace industry, the opportunities and benefits from being located here are very important in attracting talent, FDI and global players which are interested in participating in larger initiatives such as the Learning Factory. The COEDC has existing strong relationships with the relevant Ministries in both the Federal and Provincial governments handling the aerospace sector, and can liaise with AIAC Pacific and the local industry association to best leverage marketing and talent attraction assets.

iii Networking events.

Many companies interviewed said they would welcome networking events to better understand the players in the local industry. These types of events are critical if an industry association is to succeed. While longer term these events could be industry-driven, the COEDC can assist in the organization of the events in the short-term.

iv Maintenance of the Okanagan Aerospace Database and Asset Map. It is important that these documents be updated on a regular basis.

v Seminars on issues relevant to local industry.

vi Business planning assistance.

Smaller companies have indicated a need for business planning services. The COEDC has developed award-winning business planning programs focussed on the agricultural sector, and it would be a relatively simple matter to modify the existing programs and tailor them to the needs of the aerospace sector.

vii Succession planning facilitation.

Many of the small companies interviewed did not have a succession plan in place, and most do not understand what is entailed and the time it takes to plan and execute a successful transition.

Recommendations:

- ➔ **Create of an industry-led association to develop and lead strategies for sector growth.**
- ➔ **Develop aerospace-specific marketing and talent attraction collateral.**
- ➔ **Facilitate networking, thought leadership, and business/succession planning sessions.**

C. COEDC/PARTNER INITIATIVES: SHORT TERM OPPORTUNITIES

i Collaboration with the Region's Technology Sector

As reflected in a core theme of this document, technology is impacting every aspect of our lives, and nowhere is this more evident than the aerospace sector. Digital technologies are transforming every part of the aerospace sector from customer experience to design, manufacturing and maintenance. *Despite the rapid proliferation of these technologies on a global basis, adoption of digital technologies is still in the early stages among most Okanagan aerospace companies.* This is due in large part to the small size of most companies, or the older platforms they service. Deeper integration of technology can add significant value to the products and services they provide and/or lower costs.

Through the initiative of community champions and drivers such as the COEDC and Accelerate Okanagan, the Okanagan technology community has made great strides over the last decade and generates over \$1.3 billion in economic impact. Organizations such as Accelerate Okanagan and facilities such as the Okanagan Centre for Innovation are helping catalyze growth and attract a diverse range of technologies. Innovative companies are developing leading-edge data compression and security solutions designed for gaming applications – technologies that may hold interest for other industries such as aerospace where the massive collection of data requires new technologies to handle and protect the information.



Although the Okanagan technology sector is experiencing considerable growth, there currently is little interaction or collaboration with the aerospace sector.

This is an area where the COEDC and partners can help facilitate connectivity between parties to create awareness of capabilities and challenges.

In addition to networking sessions, the COEDC can host events where companies can showcase capabilities or pose problems in need of a technology solution. This format is modeled after the **BC Innovation Council's Technology Roadshow** where companies would “pitch” a problem they are facing to an audience of technology companies. The idea is to create awareness of a problem, foster an exchange of ideas that may lead to relationships and ultimately, technology-based solutions.

Focused “roadshows” connecting the aerospace and technology communities held regularly can deepen the relationship of the two sectors. Including YLW and potentially airlines is recommended as much of the technology application being developed is around customer

experience and the development of the concept of “Airport of the Future.” A city the size of Kelowna and a mid-sized airport such as YLW are well positioned to develop, implement and prove new technologies that can then be deployed on a large scale. YLW is already an early adopter in the testing of new technologies and is therefore an ideal candidate to be involved with technology integration initiatives.

ii Local Supply Chain Integration

Okanagan aerospace companies do very little business with local fabricators and other suppliers. While there are issues with capability and capacity, opportunities to source from local suppliers should be explored. There is a general lack of knowledge about capabilities and capacities of local suppliers. While the industry does require certain certifications for some components, companies are often unwilling to pursue time-consuming and costly certifications as there is uncertainty as to demand. An up-to-date and accessible database combined with supplier development events can help cultivate new supply chain relationships.

Recommendations:

- **Facilitate collaboration between the aerospace and technology communities.**
- **Facilitate relationships between aerospace companies and local suppliers and fabricators.**



D. COEDC/PARTNER INITIATIVES: LONG TERM OPPORTUNITIES

There are two significant longer-term opportunities, which if implemented, can act as powerful mechanisms to drive and sustain sector growth and foreign direct investment. The first is an industry attractor such as The Learning Factory; the second is the YLW Aerospace Campus.

i The Learning Factory

The Learning Factory is planned to be part of the 30-acre Innovation Precinct on the campus of UBC Okanagan. The concept is to create a collision zone between industry and academia through the creation of a platform for solving problems with digital technologies in real time in a factory environment rather than a laboratory setting. The Learning Factory is an application of Industry 4.0 principles to the manufacture of safety-of-flight composite components for aircraft. Avcorp, with Boeing support, is planning production of components for the 787-9/10 series aircraft.

This partnership between UBC, the Composites Research Network and the Avcorp Group will be a game changer for the Okanagan if it is implemented not only for its impact on the aerospace industry, but on manufacturing generally as the data collection and analysis technologies will have cross-industry application. Several internationally renowned companies have expressed interest in participating in the Learning Factory as the data collected has the potential to significantly increase yields, reduce the cost of production, and provide a much faster path to certification of new components.

While the COEDC does not have a direct role in the development or actualization of the Learning Factory concept or execution, assisting the partner organizations through attraction and retention strategies can help facilitate the decision-making process, as well as provide collateral to attract potential employees, companies, and foreign direct investment into the region.

Recommendation:

- ➔ **Support the establishment and operation of the Learning Factory and similar initiatives through attraction and retention strategies and tactics.**

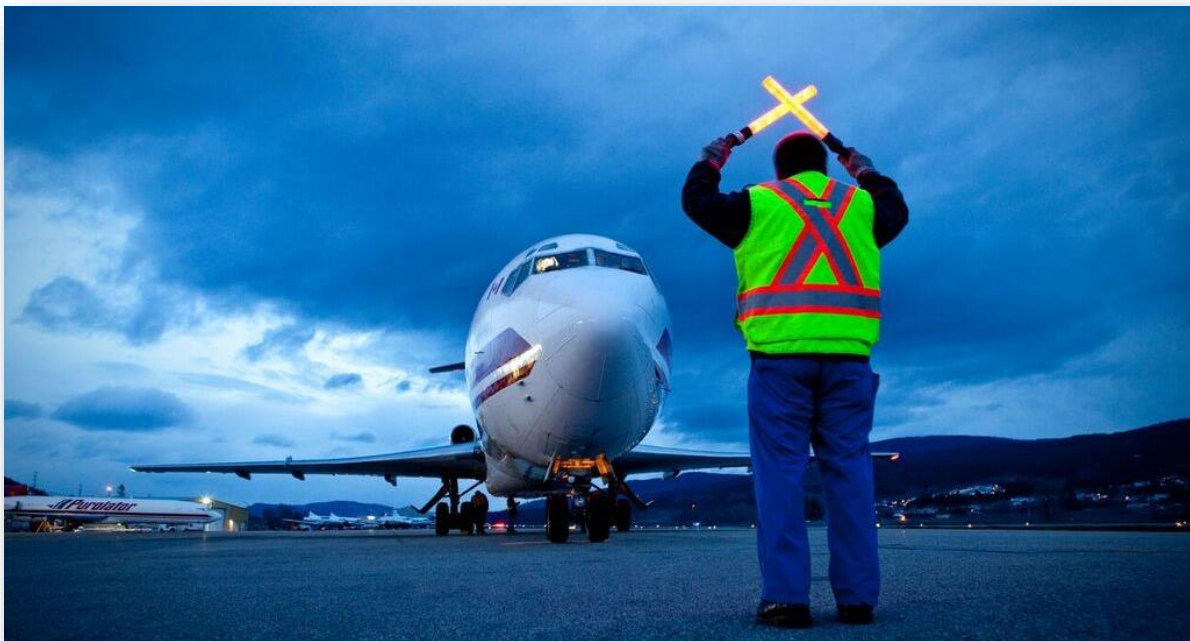
ii YLW Aerospace Campus

YLW has acquired land north of the airport for future use. One proposed use is the development of an Aerospace Campus, a flexible-use facility that promotes a wide range of development opportunities for aerospace and related companies. Proximity to the airport and UBC-Okanagan are attractive features for companies in the sector, but current lack of available land and the infrastructure costs associated with development inhibit small companies from making a move there. An aerospace campus could provide access to facilities through shared resources and the development of a “mini cluster.” In concept, YLW could provide basic infrastructure such as taxiways, and industry could partner to help finance the development of facilities. Examples of companies that could operate out of the aerospace campus would include fixed base operators such as charter companies, MROs, aerospace R&D companies, flight schools and crew training schools. The campus could also be the location for shared-resource facilities such as a rotary wing simulator.

Promoting an aggregation of aerospace companies in close proximity to the airport would help foster the cluster mentality that is a critical component to organic growth. The viability of the concept including specific offerings, target companies, revenue models, costs and their allocation, must all be determined, and it is recommended that the COEDC in partnership with YLW commission a feasibility study to determine viability and best use of the aerospace campus. The COEDC may also assist with the investigation of potential funding for the study.

Recommendation:

- ➔ **Commission a YLW Aerospace Campus feasibility study in partnership with YLW and other regional stakeholders.**



8. REFERENCES

Statistics, trends and general industry information obtained through the following Provincial and Federal Government departments and other organizations:

- [Industry Canada](#)
- [Global Affairs Canada](#)
- [Ministry of International Trade BC](#)
- [Canadian Council for Aviation & Aerospace](#)
- [AIAC Pacific](#)
- [MITACS](#)
- [Province of British Columbia](#)
- [Pitt Meadows Economic Development Corporation](#)
- [Economic Development Mississauga](#)
- [City of Abbotsford Economic Development](#)

Documents/Articles

- [BC Ministry of International Trade Aerospace Industry Analysis](#)
- [Aerospace Innovation White Paper \(2016\) – AIAC](#)
- [Innovation Response – Aerospace – Province of British Columbia](#)
- [The Innovation Ecosystem in BC's Interior Region – Ministry of Technology, Innovation & Citizens' Services](#)
- [Report on the Aviation and Aerospace Industry Labour Market – Canadian Council for Aviation & Aerospace](#)
- [Canada's Innovation Agenda– Government of Canada](#)
- [State of Canada's Aerospace Industry \(2017\) – Innovation, Science and Economic Development Canada and AIAC](#)
- [Building the Foundation – AIAC Pacific 2014/15 Report](#)
- [Economic Impact Analysis and Capabilities Study of the BC Aerospace Industry – KPMG](#)
- [The State of the Canadian Aerospace Industry \(2016\) – Industry Canada/AIAC](#)
- [Beyond the Horizon: Canada's Interests and Future in Aerospace– Government of Canada](#)

- [Western Canada's Thriving Aerospace and Defence Sector](#) – **Western Economic Diversification**
- [Innovation in Aerospace](#) - **Royal Academy of Engineering in association with the Royal Aeronautical Society**
- [This is What the Demise of Oil Looks Like](#) – **Bloomberg**
- [Kelowna International Airport MasterPlan to 2045](#) – **Kelowna International Airport**
- [Airport of the Future: From Vision to Reality](#) – **Michael Deittrick, DXC Technology**
- [Trends and Themes in the Aircraft Market](#) – **Teal Group Corp.**
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- [Clusters and the New Economic of Competition](#) – **Michael Porter**
- [Post Tier 1: The Next Era in Aerospace Supply Chain Evolution?](#) – **Kevin Michaels**
- [Northern Airlines Feeling the Strain as Canada Faces Shortage of 6,000 Pilots](#) – **CBC News**
- [Pitt Meadows Economic Development Corporation](#) - **Targeted Aerospace Strategy**
- [Connecting South Carolina's Aerospace Cluster](#) – **South Carolina Council on Competitiveness**

In-Person Interviews

- Sam Samaddar, Airport Director, Kelowna International Airport
- Phil Barker, Vice-President, Research, UBC-Okanagan/The Learning Factory
- Myles Bruns, Regional Manager, Economic Development, Ministry of Jobs, Tourism and Skills Training, Province of BC
- Jennifer Tedman-Jones, Director, Business Development, MITACS Okanagan Campus
- Janice Larsen, Executive Director, Regional Innovation Initiatives, BC Ministry of Technology, Innovation & Citizens' Services
- Dwayne Lucas, Regional Director, CARIC
- Rob O'Brien, Director, Transportation Technology and Innovation Branch, BC Ministry of International Trade and Multiculturalism
- Taylor Briggs, Vice President, Government Relations & Policy, AIAC Pacific
- Jim Sheehan, President, Technical Aero and PNAAC Board member
- Robert Fine, Director of Business and Entrepreneurial Development, City of Kelowna
- John Perrott, Economic Development Officer, City of West Kelowna

- Parm Sidhu, Airport General Manager, Abbotsford International Airport
- Wendy Dupley, Executive Director, City of Abbotsford Economic Development
- Brad Audette, Director, Engine Programs, MTU
- Dr. Barry McGillivray, Associate Dean, Okanagan School of Business
- Dr. Phil Ashman, Regional Dean, Central Okanagan, Okanagan College