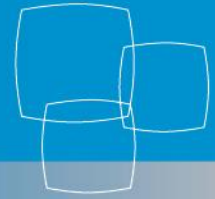


2013 Report



The State of the Canadian Aerospace Industry



Aerospace Industries
Association of Canada

L'Association des industries
aérospatiales du Canada



Canada

Presentation Overview

- **Context and Methodology**
- **Business Drivers & Economic Impact**
- **Innovation & Investment**
- **Trade**
- **Skills**
- **Key Findings**
- **Annex – Sector Definitions**

The recent Report of the Aerospace Review highlights the importance of relying on quality information and enhancing collaboration for the future of the Canadian aerospace industry

Industry Canada and the Aerospace Industries Association of Canada (AIAC) agreed to leverage their respective expertise and formed a collaborative research partnership to provide the most accurate, detailed and relevant analysis to both industry and government decision makers

The two parties agreed that:

- Industry Canada would develop detailed economic statistics;
- AIAC would consult and validate with its network on business drivers, issues and trends; and
- The statistics, issues and trends would be jointly released on an annual basis

Quantitative Analysis Methodology Principles

- Data is compiled from Government agencies information based on tax returns* (as opposed to data based on sampling) with firm-level adjustments in order to capture all key sector firms and segments**
- Economic impact and intensity analysis based on GDP***
- Industry specific economic multiplier to estimate total economic impact****
 - *Direct*: Firms where aerospace is their main activity
 - *Indirect*: Canadian suppliers to firms where aerospace is their main activity
 - *Induced*: Offset economic impact of direct and indirect
- R&D***** investments / intensity*** and other international comparative analysis based on OECD internationally recognised definitions

* Confidence intervals estimated at +/- 2.5%

** Addition of key firms in space manufacturing, avionics manufacturing, flight simulator manufacturing and maintenance repair and overhaul (MRO) service providers

*** GDP better represents activity that actually occurs within a country in contrast to revenues that include foreign content as well as R&D, employment and revenues from outside of Canada (even if it was performed by a Canadian firm). MRO firms excluded from R&D and intensity analysis (manufacturing segment accounts for 99.4% of sector R&D)

**** Economic multiplier developed by Statistics Canada based on input-output model and other key economic variables

***** R&D is the systematic investigation carried out in the natural and engineering sciences by means of experiment or analysis to achieve a scientific or technological advance. Research is original investigation undertaken on a systematic basis to gain new knowledge. Development is the application of research findings or other scientific knowledge for the creation of new or significantly improved products or processes. If successful, development will usually result in devices or processes which represent an improvement in the state of the art and are likely to be patentable.

Key pressing challenges* and opportunities that Canadian aerospace firms** are expected to face in the next three years...

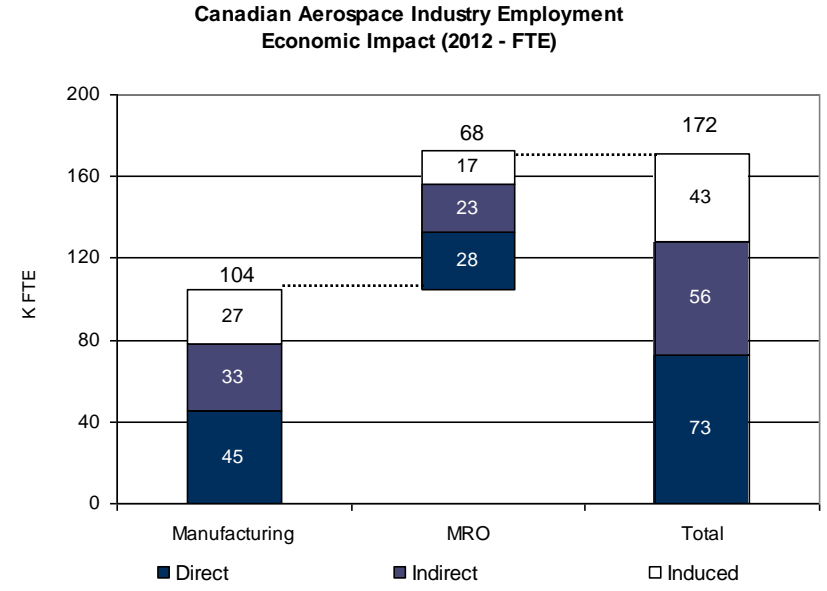
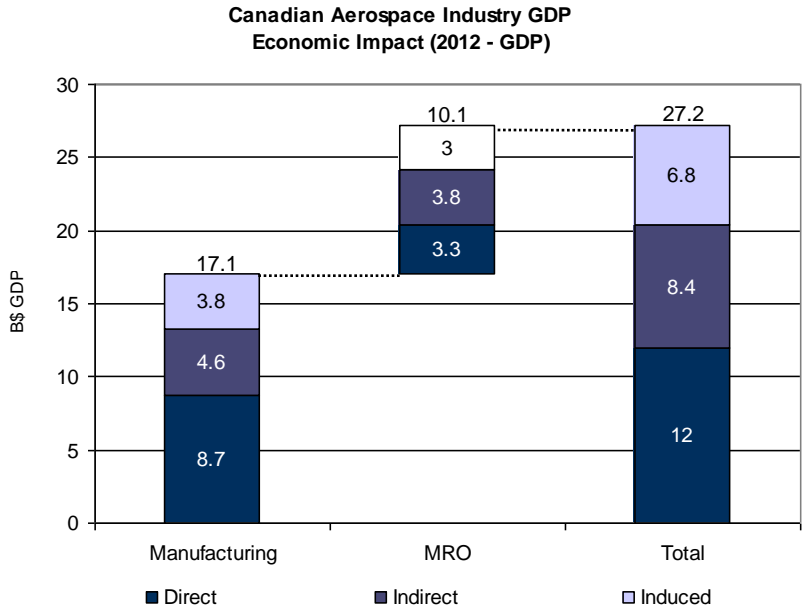
- ✓ **Global economic conditions**
- ✓ **Introducing new or improved products or services to market**
- ✓ **Developing new markets**
- ✓ **Increasing participation into Tier 1 / OEMs supply chains in Canada and abroad**
- ✓ **Increasing competition from emerging markets**
- ✓ **Responding to customer requirements to reduce production costs**

Source: AIAC Annual Business Trends and Drivers Consultation, 2013

*Key pressing challenges are not listed by level of importance

** Industry stakeholders representing close to 70% of total Canadian aerospace industry employment and revenues

The Canadian aerospace industry* contributed more than \$27B GDP and 170,000 FTEs to the Canadian economy** in 2012

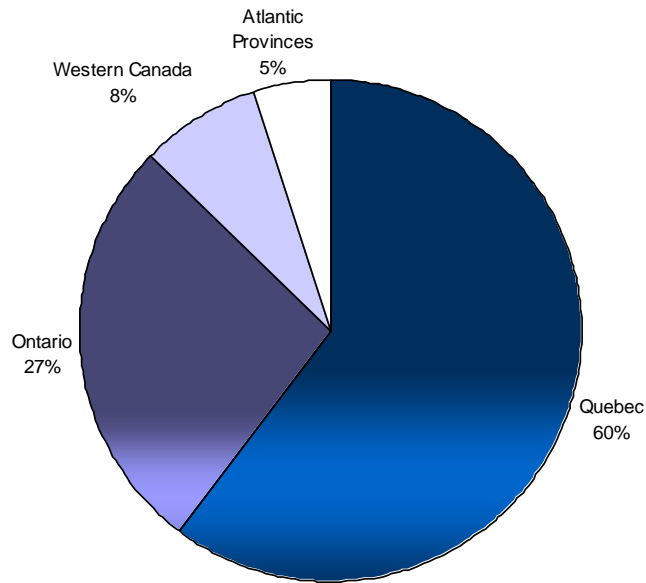


- The Canadian aerospace industry is responsible for more than \$42B of revenues from firms across multiple industries in Canada (\$22.8B of direct revenues)
- Canada's aerospace manufacturing sector is ranked 5th among OECD countries in terms of revenues and GDP and 1st in terms of relative importance over total manufacturing (2010)

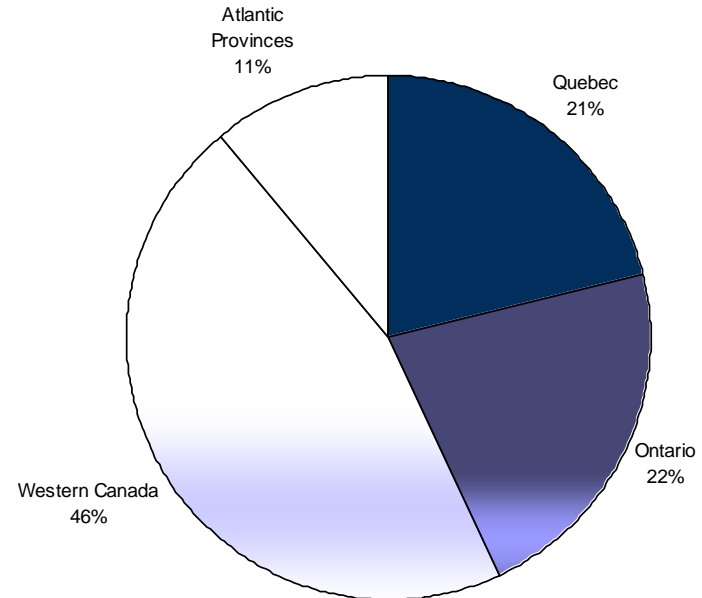
* MRO service sector (excludes MRO activity performed by manufacturers and airlines). Space manufacturing is included in the aerospace manufacturing sector
 ** Direct: Firms where aerospace is their main activity; Indirect: Canadian suppliers to firms where aerospace is their main activity; Induced: Offset economic impact of direct and indirect

The Canadian aerospace industry is active across the country...

Canadian Aerospace Manufacturing Sector
Regional Direct GDP Analysis (2011)



Canadian Aerospace MRO Sector
Regional Direct GDP Analysis (2011)



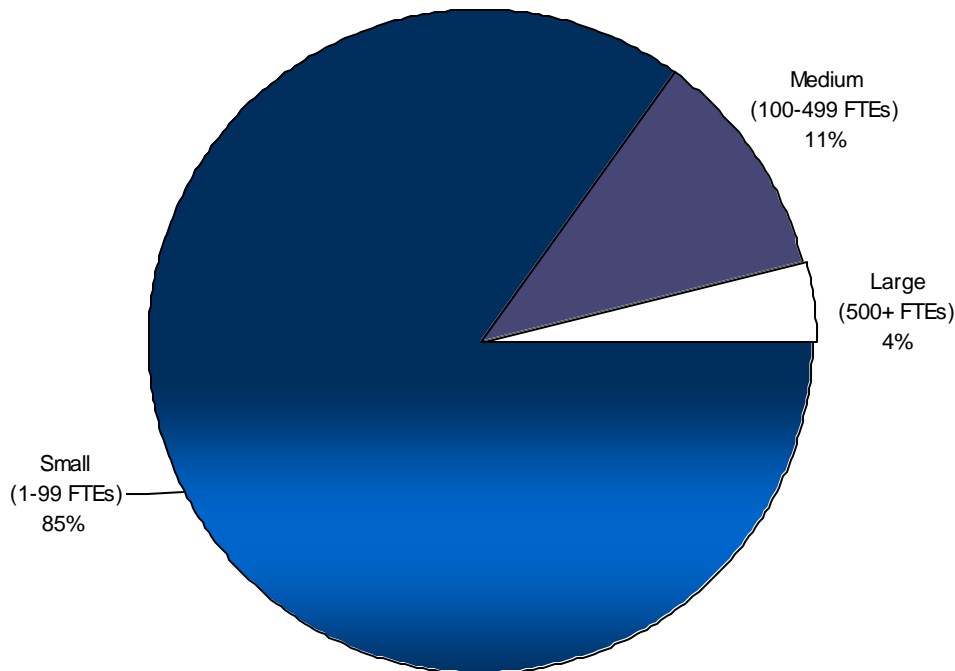
- Atlantic Canada was the fastest growing region in both segments (*close to 20%*) during the 2006-2011 period
- Central Canada accounts for the vast majority of the manufacturing sector
- Western Canada plays a dominant role in terms of MRO services*

*MRO service sector (excludes MRO activity performed by manufacturers and airlines)

Source: Industry Canada. Economic modelling based on data from Statistics Canada (Business Registry and Cansim), Canada Revenue Agency and firm level observations, 2013

The Canadian aerospace industry is comprised of over 700 firms* of all sizes

Canadian Aerospace Industry Size of Firm Share Analysis (2012)



During the last 10 years (2002-2012):

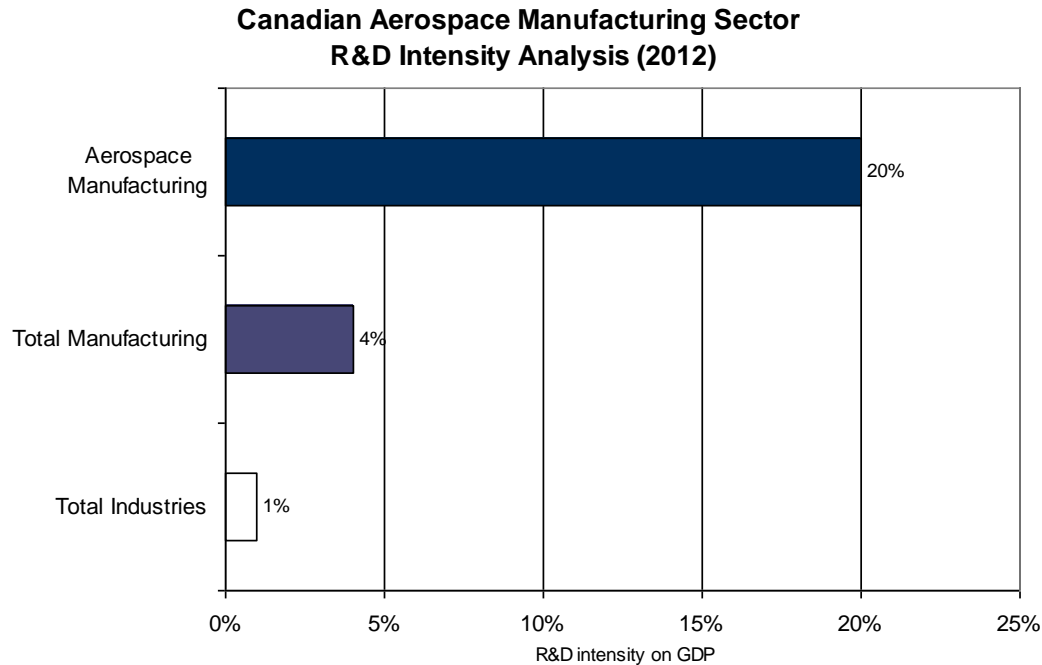
- The Canadian aerospace manufacturing sector has experienced:
 - A sizeable increase in number of medium-sized firms (100-499 FTEs);
 - A slight decline in number of small-sized firms (1-99 FTEs); and
 - A few firms transitioning between size categories.
- A number of MRO** medium-sized firms evolved to large firms (500+ FTEs)

*Firms where aerospace is their primary business activity

**MRO service sector (excludes MRO activity performed by manufacturers and airlines)

Source: Industry Canada. Economic modelling based on data from Statistics Canada (Business Registry and Cansim), Canada Revenue Agency and firm level observations, 2013

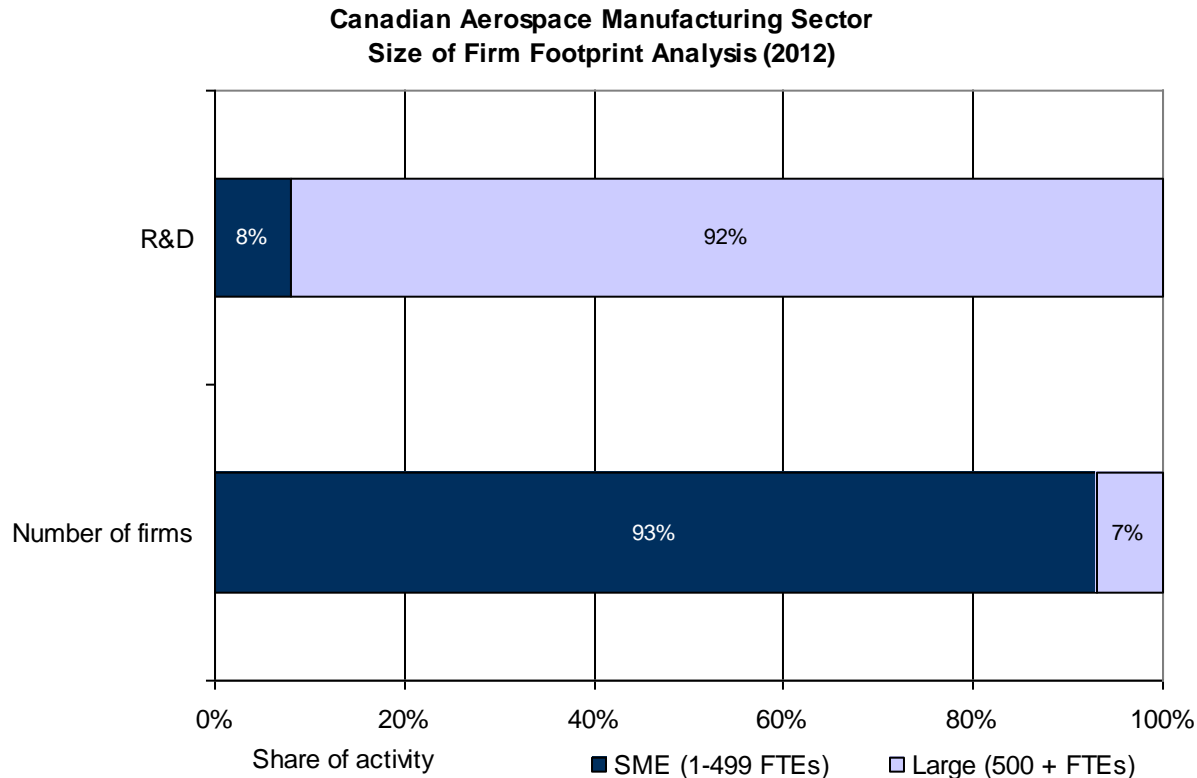
The Canadian aerospace manufacturing sector is one of the most R&D intensive* in the Canadian economy...



- Canadian aerospace manufacturers increased their R&D investment by more than 40% in the last five years (2007-2012)
- The vast majority of the R&D is performed in Central Canada (65% in Québec and 29% in Ontario in 2010)
- On a global basis, the Canadian aerospace manufacturing sector is in the middle of the pack of G7 countries in terms of R&D intensity (2010)

*R&D intensity: R&D investment / GDP

Source: Industry Canada. Economic modelling based on data from Statistics Canada (Business Registry and Cansim), Canada Revenue Agency, OECD and firm level observations, 2013

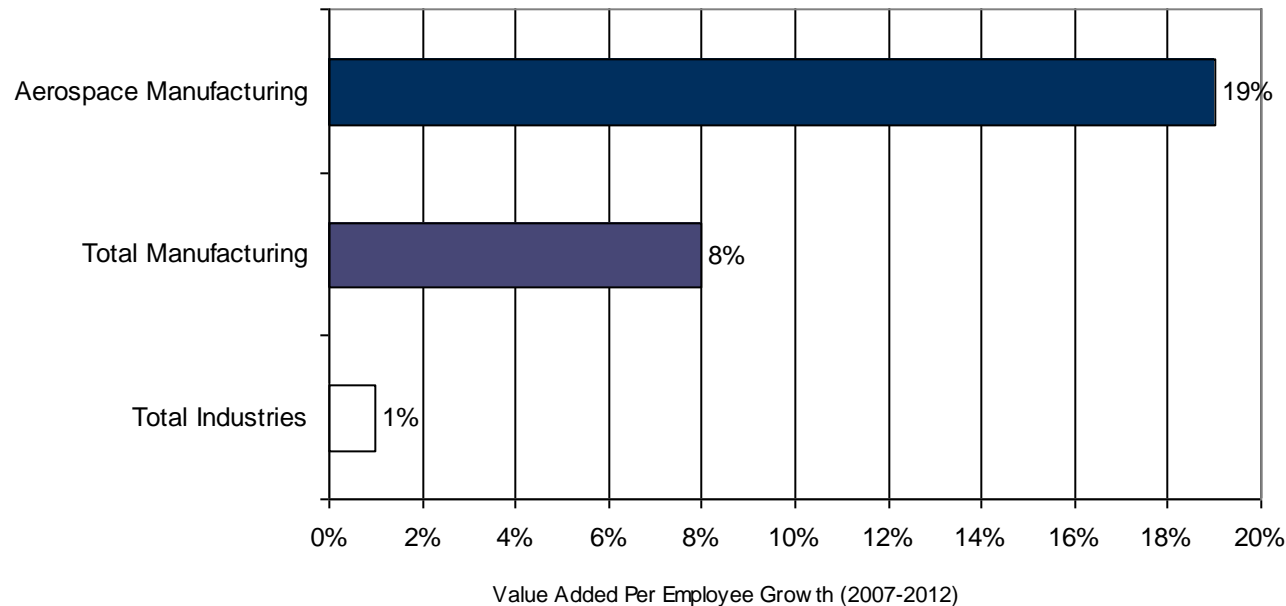


- SMEs (1-499 FTEs) represent 93% of Canadian aerospace manufacturing firms* while large firms (500+ FTEs) play a significant role in terms of R&D investment

* Firms where aerospace is their primary business activity

The Canadian aerospace manufacturing sector is a leader in terms of productivity growth* ...

Aerospace Manufacturing Sector 5 Year Productivity Comparative Analysis



- Value added (GDP) per employee in the aerospace manufacturing sector is more than 60% higher than total manufacturing and 80% higher than total economy
- The Canadian aerospace manufacturing sector ranked #1 among OECD countries in terms of productivity growth* (2004-2009 period)

*Productivity growth estimates based on value added per employee growth trends analysis (GDP/FTE)

Source: Industry Canada. Economic modelling based on data from Statistics Canada (Business Registry and Cansim), OECD and firm level observations, 2013

Collaboration is at the forefront of innovation in the Canadian aerospace manufacturing sector...

**Planned participation in innovation* collaboration activities
by Canadian aerospace firms** over the next three years**

	Universities	Government Research Institutes	Suppliers	Customers (e.g. Tier 1 and OEMs)
Basic Research (TRL*** 1-3)	High	Medium	Medium	Medium
Applied Research (TRL 4-6)	Medium	Medium	Medium	High
Technology Demonstration (TRL 4-6)	Low	High	High	High
Product Development (TRL 7-9)	Low	Low	Medium	High

Legend	High	Medium	Low
Planned level of participation	High	Medium	Low

Source: AIAC Annual Business Trends and Drivers Consultation, 2013

* Only applicable to Canadian aerospace operations that plan to perform R&D activities in Canada in the next three years

** Industry stakeholders representing close to 70% of total Canadian aerospace industry employment and revenues

*** Technology Readiness Level (TRL) is a measure used to assess the maturity of evolving technologies during its development.

Most important R&D* investment considerations** for Canadian aerospace firms*** ...

- ✓ Availability of skilled labour
- ✓ Direct and indirect (e.g. tax credit) Government support programs
- ✓ Ability to connect with high quality post-secondary institutions
- ✓ Access to research infrastructure
- ✓ Geopolitical stability

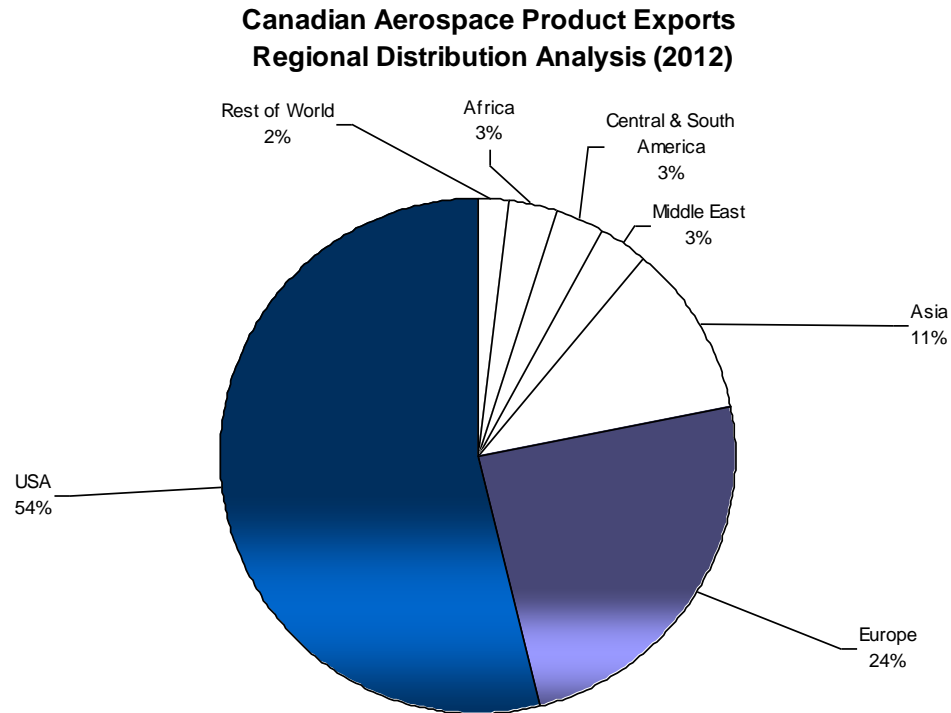
Source: AIAC Annual Business Trends and Drivers Consultation, 2013

* Only applicable to Canadian aerospace operations that plan to perform R&D activities in Canada in the next three years

** * Investment drivers are not listed by level of importance

*** Industry stakeholders representing close to 70% of total Canadian aerospace industry employment and revenues

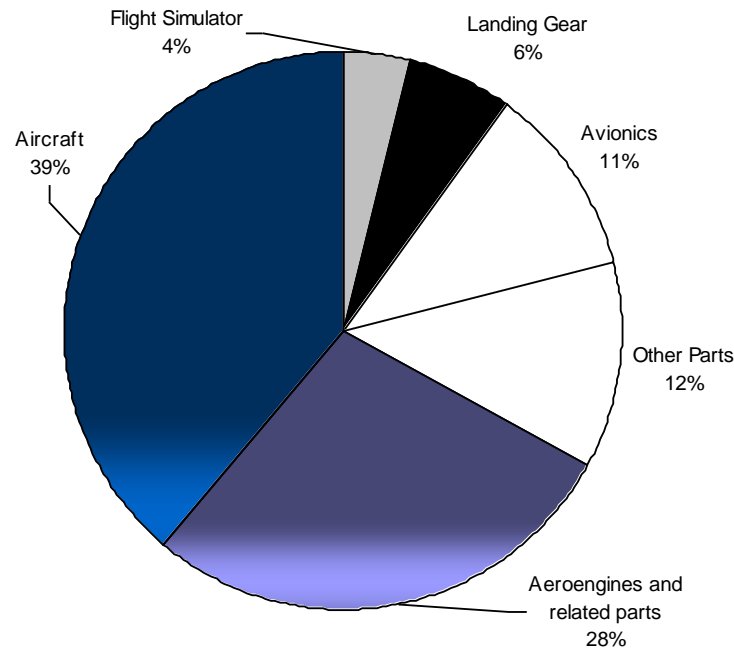
The Canadian aerospace manufacturing sector is one of the most export intensive with nearly 80% of its products exported to highly diversified markets...



- More than 45% of Canadian aerospace product exports are destined to non US markets in contrast to close to 20% for total Canadian goods exports
- Europe: Close to 25% of aerospace product exports in contrast to less than 10% for total Canadian goods exports
- While Canadian aerospace product exports to Asia grew by 158% and to Europe grew by 15%, aerospace exports the US declined by 17% for the 2007-2012 period

Close to 60% of Canada's aerospace product* exports are intermediate inputs supporting global supply chain activities....

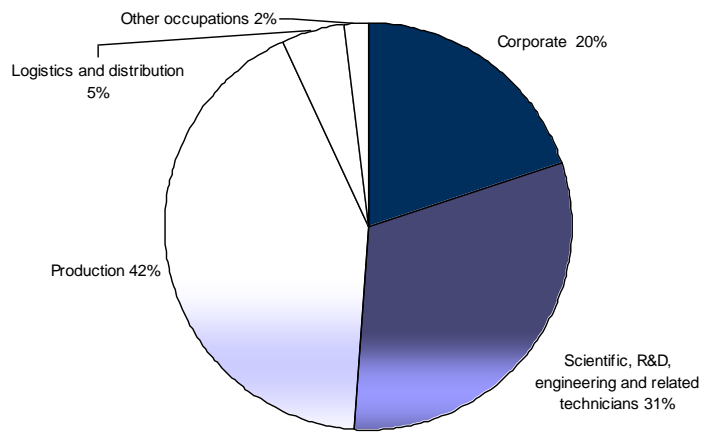
Canadian Aerospace Product Exports Segment Analysis (2012)



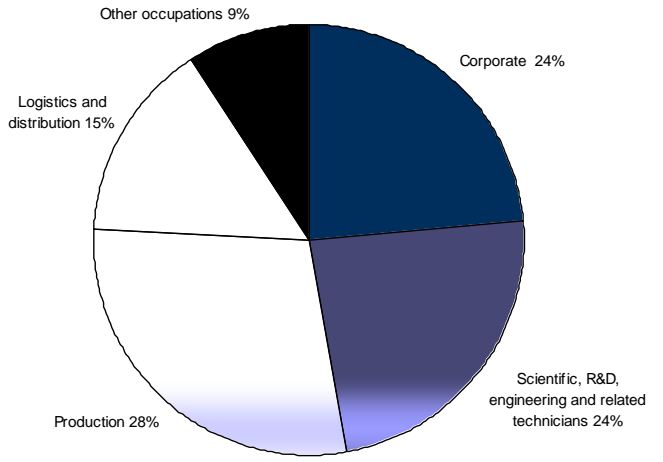
- Landing gear and flight simulator segments had the highest growth rates for the 2007-2012 period
- Although aircraft is the most dominant segment, engines and related parts play a key role in terms of Canada's aerospace exports footprint

The Canadian aerospace industry is a highly diverse and skilled talent pool* ...

**Canadian Aerospace Manufacturing Sector
Employment Category Analysis (2012)**



**Canadian Aerospace MRO Sector
Employment Category Analysis (2012)**



- More than two thirds of the total aerospace industry workforce is qualified as skilled labour**
- Average salary for aerospace manufacturing is close to 40% higher than total industries (20% higher for MRO***)
- Engineers account for close to 50% of the scientific, R&D, engineering and related technicians category in the manufacturing sector (+42% for the 2002-2012 period)

* Corporate: Includes activities such as senior management, market research/marketing, operation management, supply chain management and customer relationship management

** As defined by the National Occupational Classification (NOC)

*** MRO service sector (excludes MRO activity performed by manufacturers and airlines)


Source: Industry Canada. Economic modelling based on data from Statistics Canada (Business Registry and Cansim), Canada Revenue agency and firm level observation, 2013

- Key employment category needs in the next five years:
 - ✓ Engineers, scientists and R&D specialists;
 - ✓ Advanced manufacturing technicians;
 - ✓ MRO highly skilled personnel; and
 - ✓ Supply chain management field experts
- Retirement rate will play a key factor in the next ten years
- Size of workforce in Canada is expected to grow
- High interest in increasing investment in skills development and upskilling over the next five years

- **The Canadian aerospace industry is a strategic contributor to the Canadian economy in terms of innovation, employment, GDP and advanced manufacturing and service activities**
- **R&D investment, collaboration, supply chain participation and competition with emerging markets (e.g. productivity) is expected to drive and challenge the Canadian aerospace industry in the coming years**
- **The Canadian aerospace manufacturing sector is one of the most R&D intensive in the Canadian economy but is in the middle of the pack in terms of G7 competing countries**
- **The Canadian aerospace manufacturing sector is one of the most export intensive and export diversified of the Canadian economy**
- **The Canadian aerospace industry talent pool needs are evolving and will require targeted occupations and investments**

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Annex

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Sector Definitions

Definitions of the Canadian Aerospace Manufacturing and the MRO Service Sectors

Aerospace Manufacturing Sector	MRO Service Sector*
<p>Main activities:</p> <ul style="list-style-type: none">• Aircraft assemblies, subassemblies and parts• Aircraft engines and engine parts• Aircraft fuselage, wing, tail and similar assemblies• Tail and wing assemblies and parts (empennage)• Flight simulator• Developing and producing prototypes for aerospace products• Space vehicle, parts and propulsion units, guided missile and space vehicle engines• Telecommunication satellites and components• Avionics• Helicopters, propellers and parts	<p>Main activities:</p> <ul style="list-style-type: none">• Aircraft heavy maintenance, servicing and repairing• Aircraft engines maintenance, servicing and repairing• Aircraft components and other systems maintenance, servicing and repairing• Aircraft line maintenance (aircraft servicing at airports – excluding sales of fuel revenues)• Aircraft ferrying service• Aircraft inspection service• Aircraft testing services• Aircraft upholstery repair

*MRO service sector (exclude MRO activity performed by manufacturers and airlines)