



STATE OF CANADA'S AEROSPACE INDUSTRY

2016 REPORT

PRESENTED BY



Innovation, Science and
Economic Development Canada

Innovation, Sciences et
Développement économique Canada



Features of Canada's Aerospace Industry



Economic
Impact



Innovation



Exports



Supply
Chains



Key Findings



Annex

Innovation, Science and Economic Development Canada (ISED)
and

the Aerospace Industries Association of Canada (AIAC)

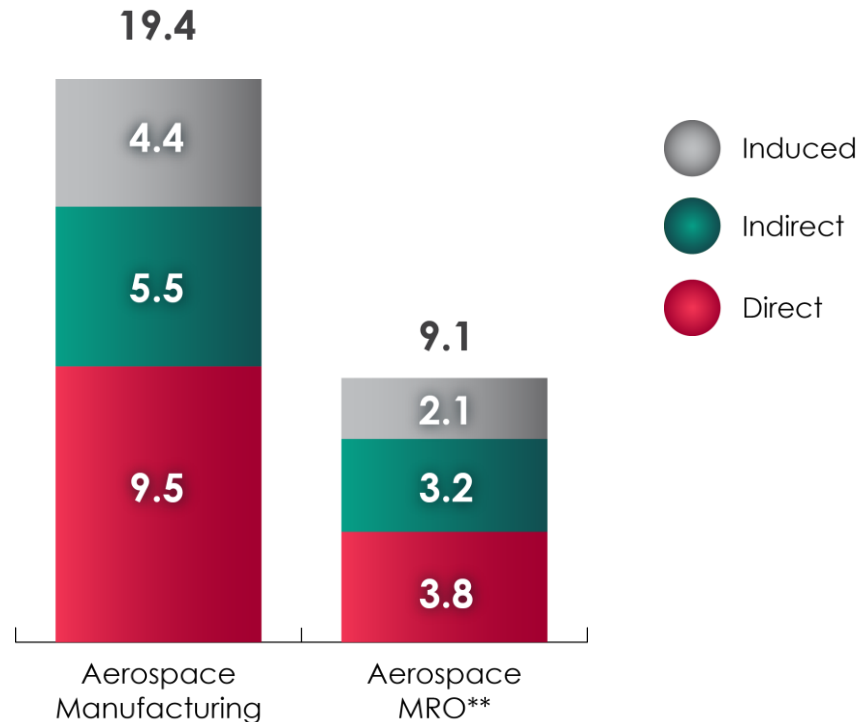
agreed to leverage their respective expertise and formed a collaborative research partnership to provide the most accurate, detailed and relevant analysis to both industry and government decision makers

The two parties agreed that:

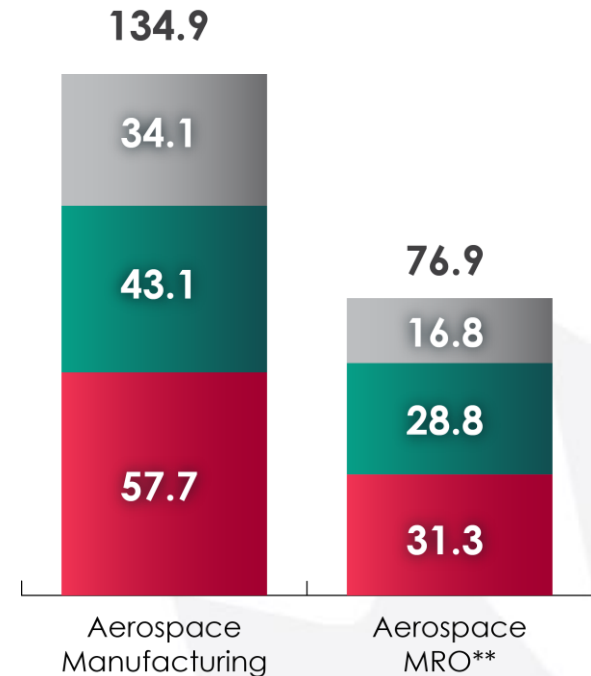
- ISED would develop detailed economic statistics
- AIAC would consult and validate with its network on business drivers, issues and trends
- They would jointly publish the statistics, issues and trends on an annual basis

Canada's aerospace industry contributed more than \$28B to GDP and 211,000 jobs to the Canadian economy in 2015

Impact on Canadian GDP,
\$ Billion, 2015



Impact on Canadian Employment,
Thousands, 2015



- The industry generated \$29.8B in revenues, 89,000 in direct employment and \$13.3B in direct GDP* in 2015

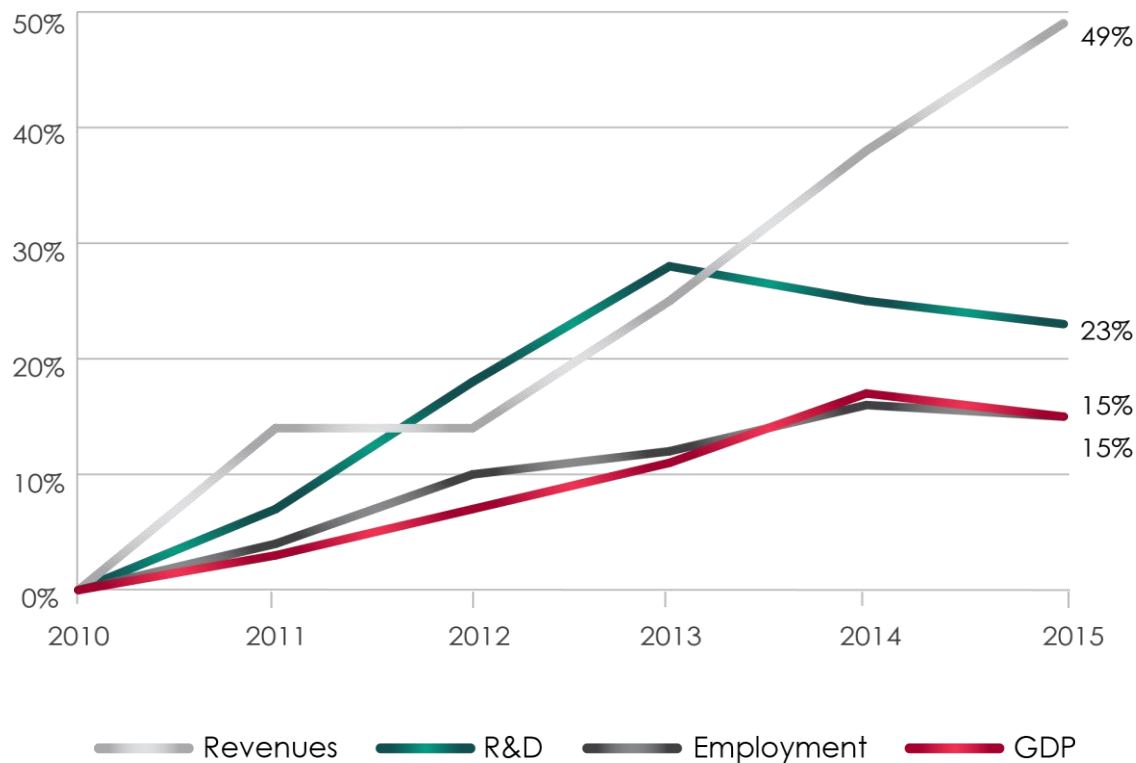
* There was a revision on aerospace product and parts manufacturing employment and GDP statistics in 2014 by Statistics Canada; see Annex Table 1 for details

** MRO represents Maintenance, Repair and Overhaul services

Source: ISED's economic model estimates based on data from Statistics Canada Business Registry and CANSIM, National Input-Output Multipliers (2011 adjusted to 2015 GDP and employment), Canada Revenue Agency, OECD and firm-level observations, 2016

GDP, revenues, employment and R&D all registered positive growth* from 2010 to 2015

Growth of the Canadian Aerospace Industry 2010-2015

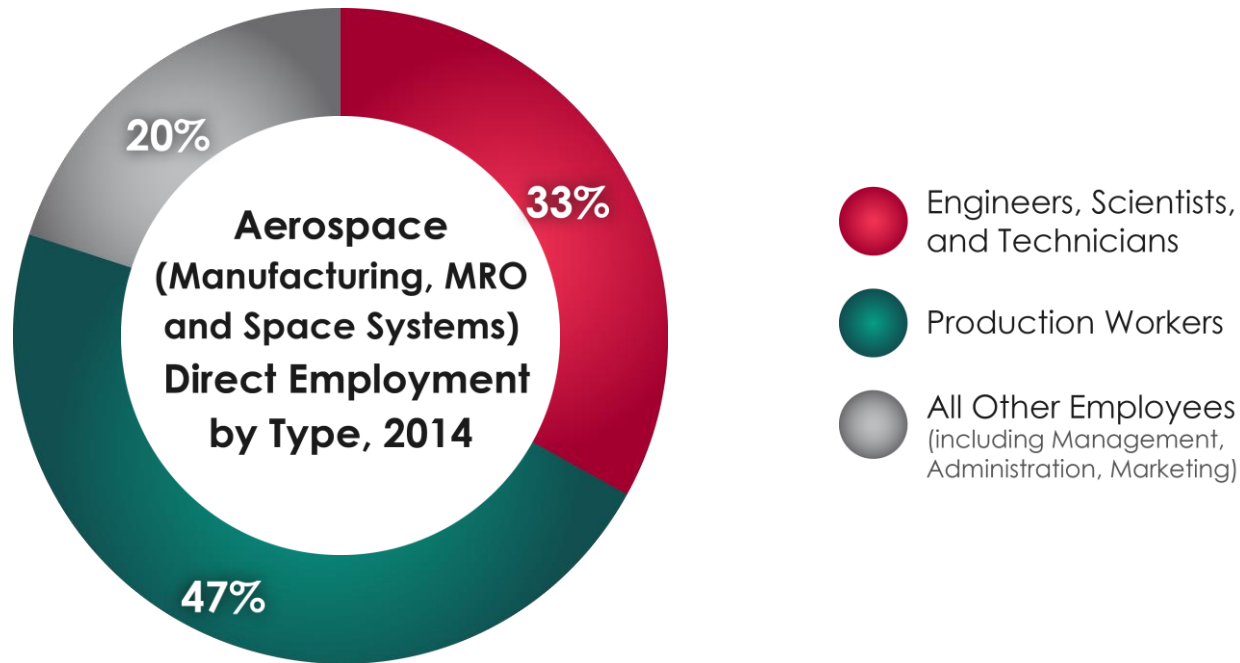


- Aerospace GDP grew 11% in manufacturing and 25% in MRO from 2010 to 2015
- GDP, employment and R&D in the Canadian aerospace industry contracted slightly in 2015*

* See Annex Table 2 and Table 3 for details

Source: ISED's economic model estimates based on data from Statistics Canada Business Registry and CANSIM, National Input-Output Multipliers (2011 adjusted to 2015 GDP and employment), Canada Revenue Agency, OECD and firm-level observations, 2016

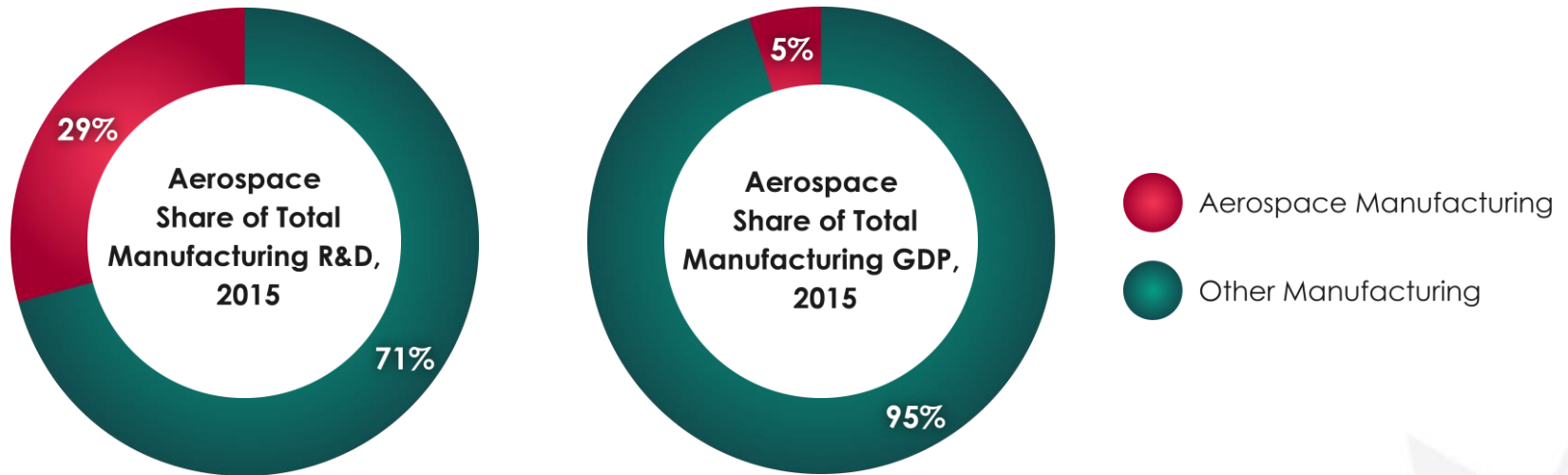
Innovation-relevant occupations accounted for over 30% of the aerospace industry's direct employment



- Close to 60% of the space systems workforce were engineers, scientists, and technicians
- Annual compensation per employee in aerospace manufacturing was 60% above the manufacturing sector average

Source: Statistics Canada CANSIM and Canadian Defence, Aerospace and Commercial and Civil Marine Sectors Survey (2014), 2016

Canadian aerospace manufacturing was the number one R&D investor across manufacturing industries in 2015

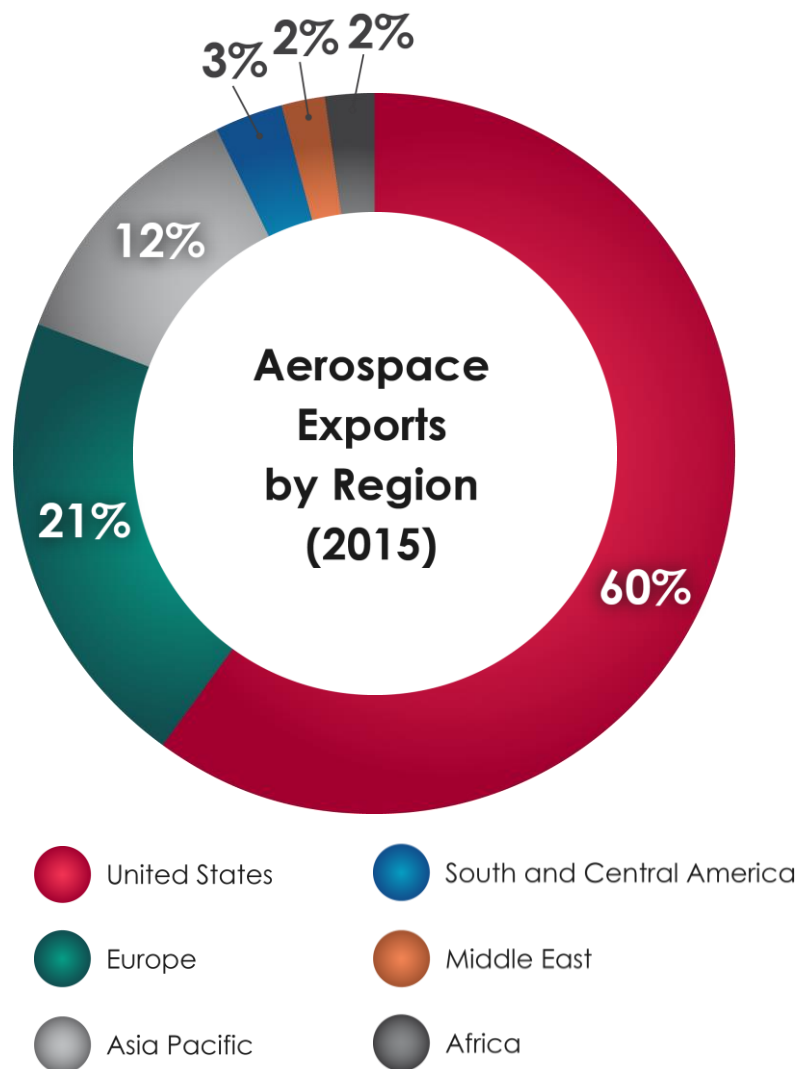


- Aerospace manufacturing accounted for close to 30% of total manufacturing sector R&D investments
- Canadian aerospace manufacturing was over five times as R&D intensive* as the manufacturing sector average
- More than 20% of aerospace manufacturing activity (GDP) was dedicated to R&D, representing \$1.9B in 2015

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

Source: Statistics Canada CANSIM and Canadian Defence, Aerospace and Commercial and Civil Marine Sectors Survey (2014), 2016

Close to 80% of aerospace manufacturing was exported



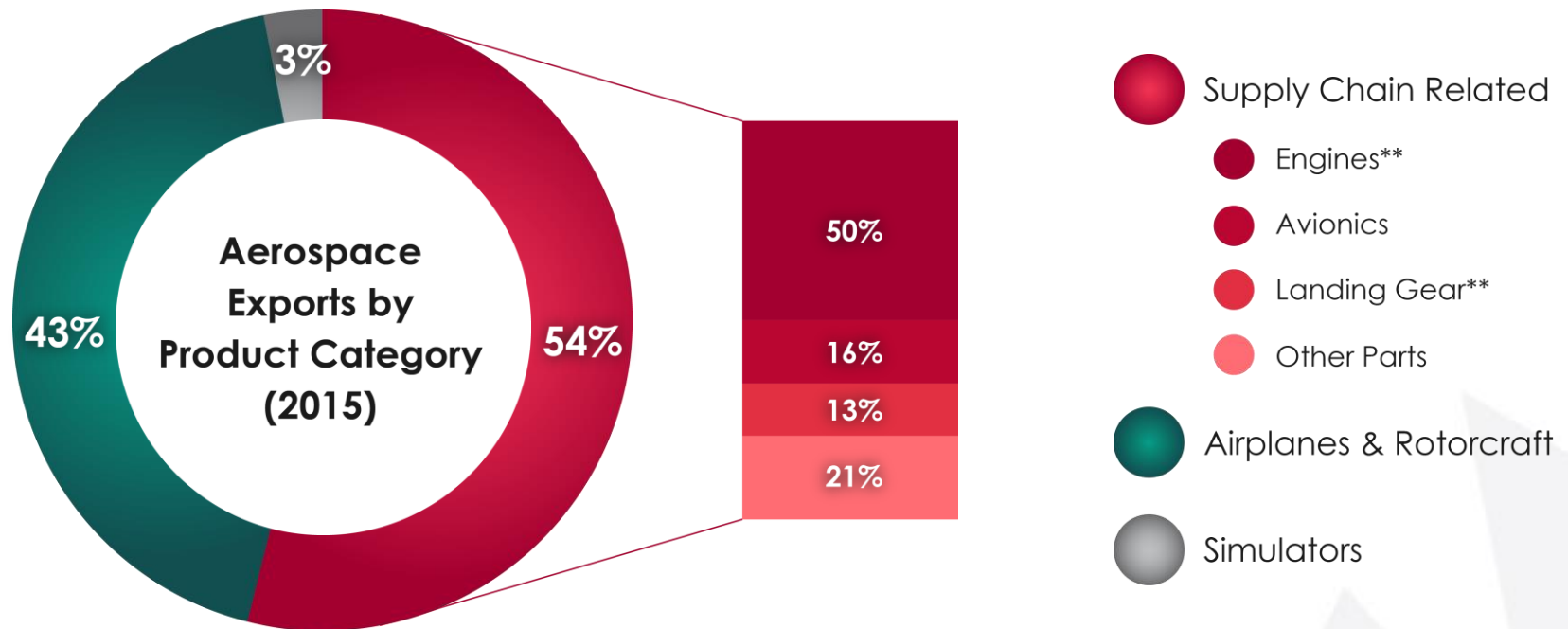
- Aerospace was twice as trade diverse* as the manufacturing sector
- Aerospace export intensity** was 55% higher than that of the manufacturing sector average
- Aerospace exports grew 54% between 2010 and 2015. Exports to the Asia Pacific market registered the highest growth (+105%) during that period

* Trade diversity refers to the share of total exports to non-U.S. markets; see Annex Table 4 for details of exports by region

** Export intensity: Exports/Shipments

Source: Statistics Canada CANSIM and Trade Data Online (2015), Global Trade Atlas (2015), 2016

Close to 55% of aerospace product exports were supply chain related*



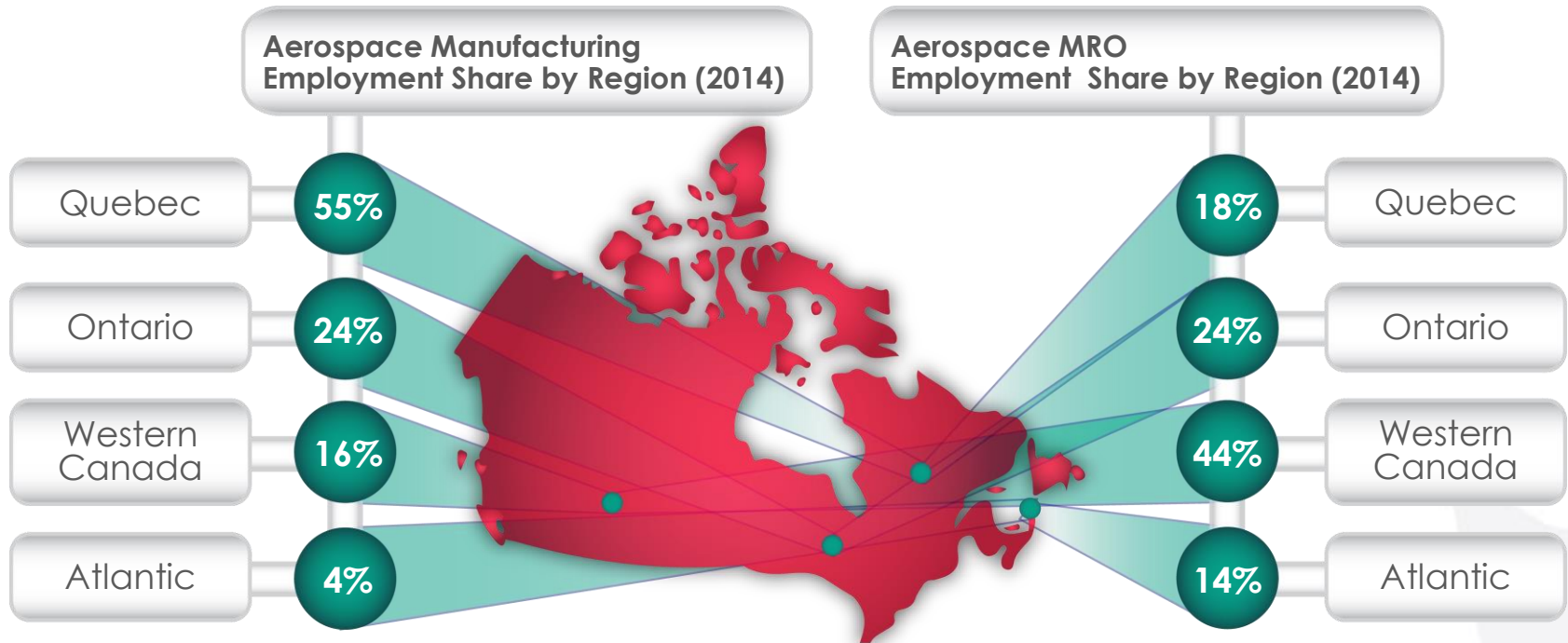
- Half of aerospace supply chain related exports were engines**
- Between 2010 and 2015, supply chain related exports grew by 50%

* See Annex Table 5 for details of exports by product category

** Engines and landing gear include their respective systems and components

Source: Global Trade Atlas (2015), 2016

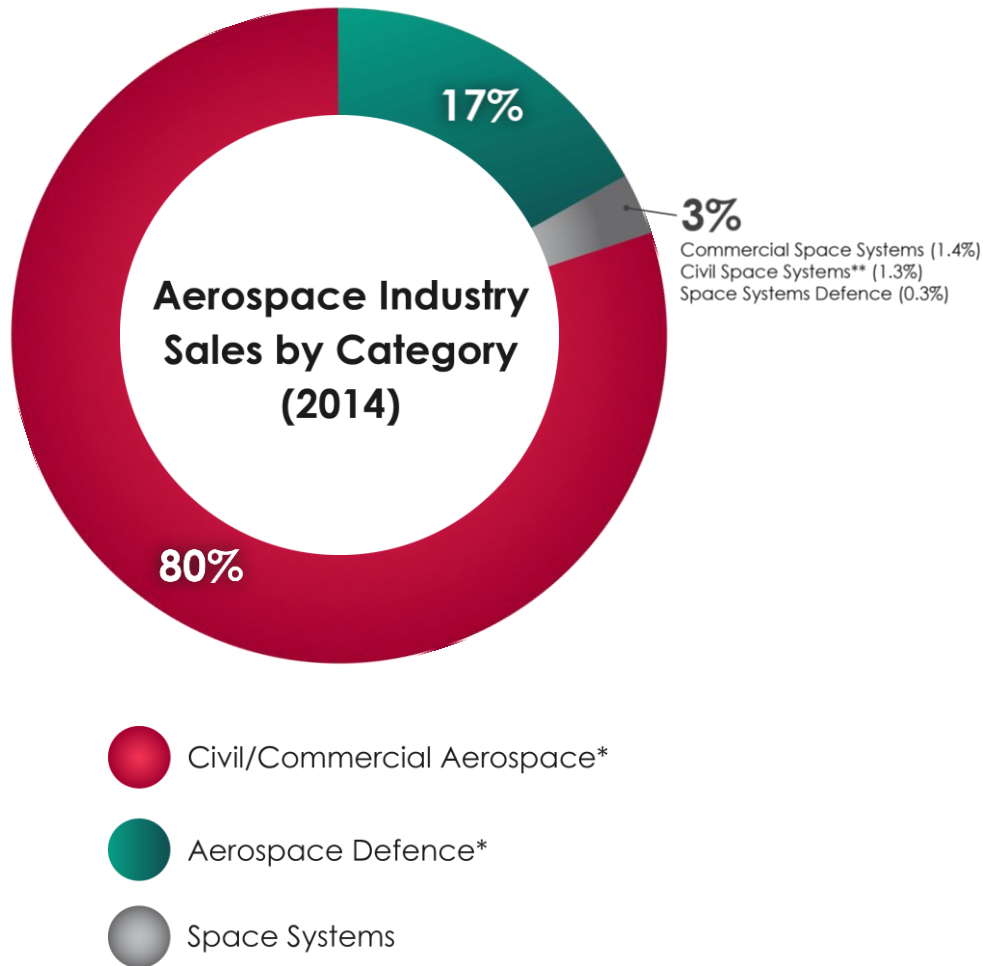
The Canadian aerospace industry is national



- The majority of aerospace manufacturing activity was located in Central Canada
- Western and Atlantic Canada captured close to 60% of aerospace MRO activities

Source: ISED's economic modelling based on Statistics Canada CANSIM (2014), 2016

The Canadian aerospace industry is comprised of a mix of civil/commercial, defence, and space systems activities



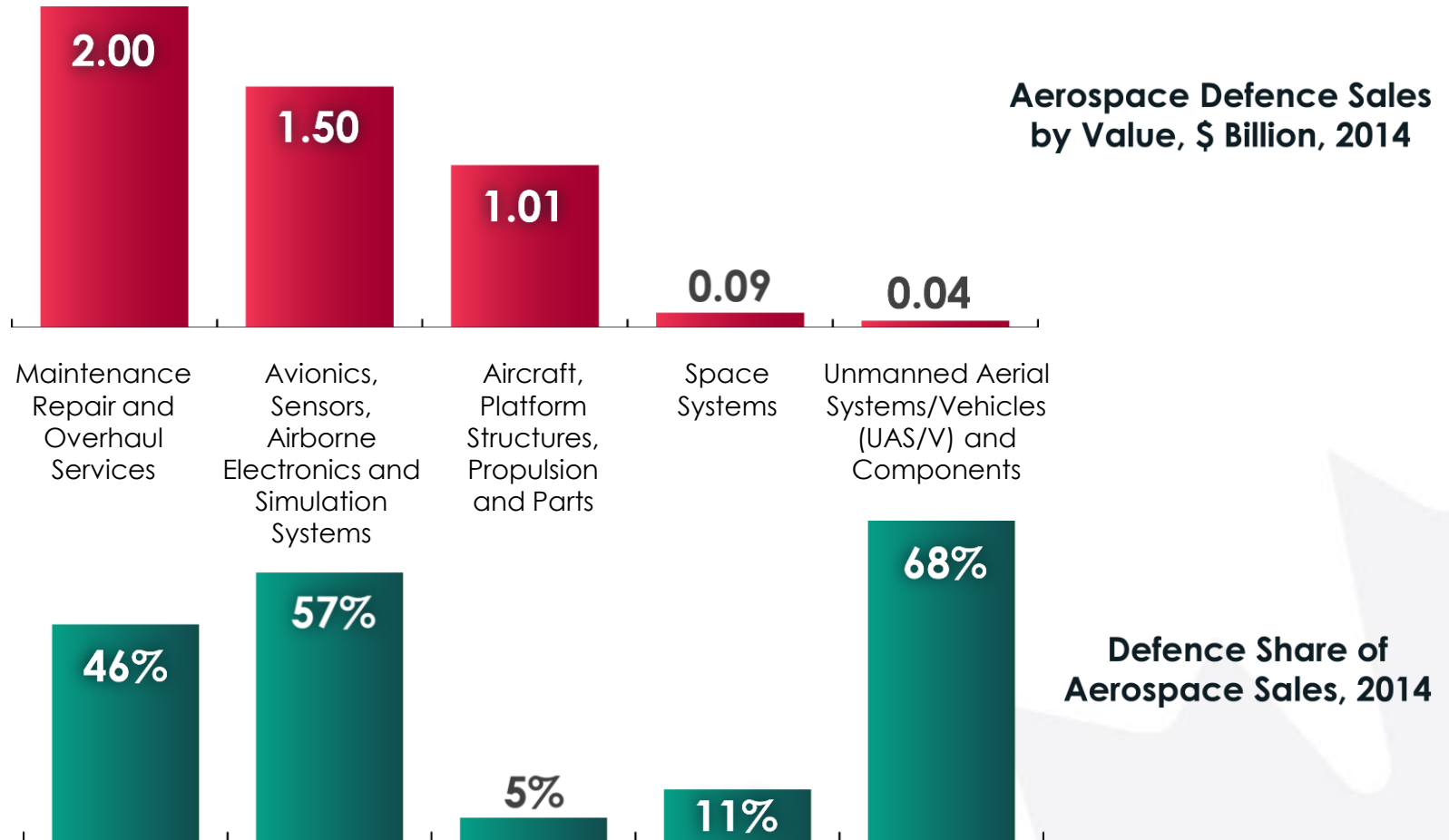
- The majority of aerospace sales were related to civil/commercial activities
- Aerospace defence activities*** captured almost half of total defence industry sales and exports****
- Space systems sales were evenly split between commercial and civil users

* Excluding space systems ** Government non-military systems *** See Annex Table 7 for detailed breakdown of aerospace defence sales

**** See Annex Table 6 for defence sales and exports by associated domains (aerospace, marine, and land and cross-domain/other)

Source: Statistics Canada Canadian Defence, Aerospace and Commercial and Civil Marine Sectors Survey (2014), 2016

MRO, avionics, sensors, airborne electronics and simulation systems captured over 75% of aerospace defence revenues

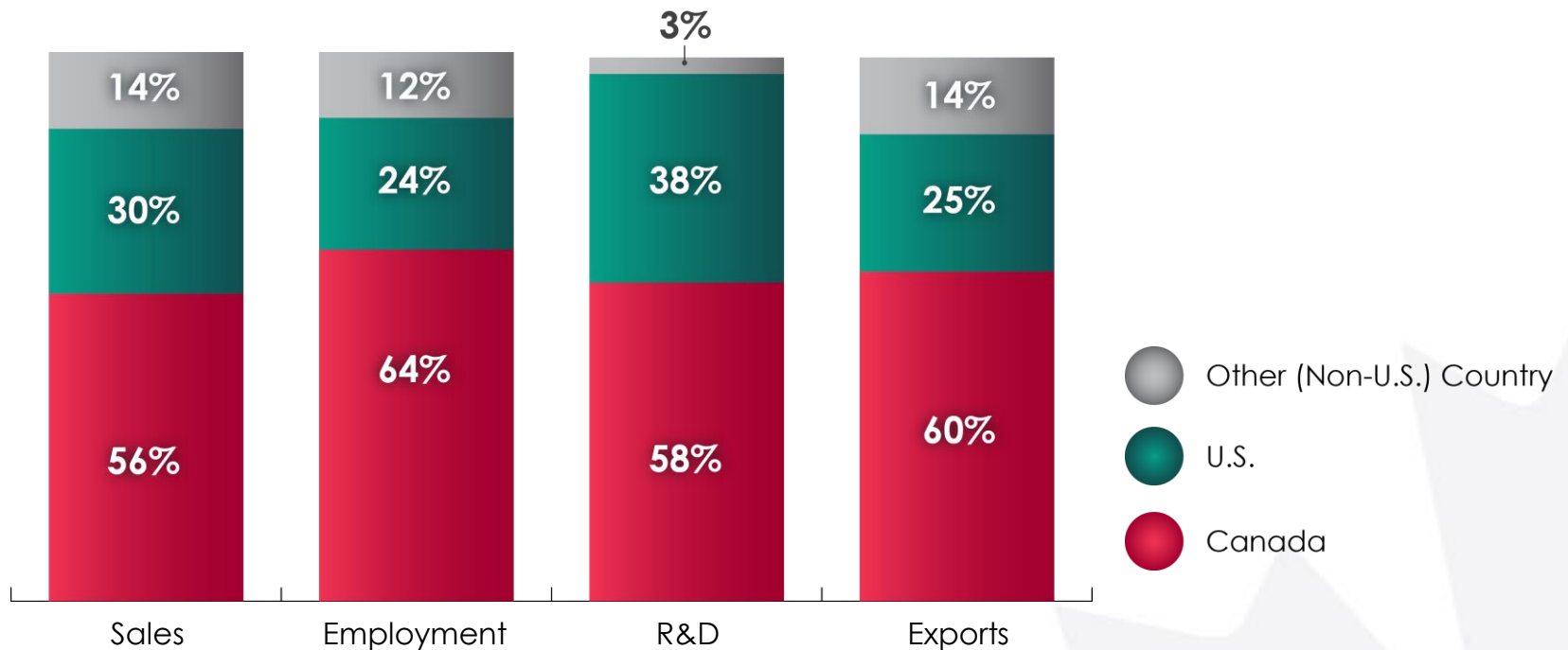


- The most defence-concentrated market was UAS/V and components

Source: Statistics Canada Canadian Defence, Aerospace and Commercial and Civil Marine Sectors Survey (2014), 2016

Canadian-owned aerospace firms accounted for the majority of the industry's overall activities

Share of Key Aerospace Industry Variables
Relating to Domestic vs. Foreign-Owned Businesses

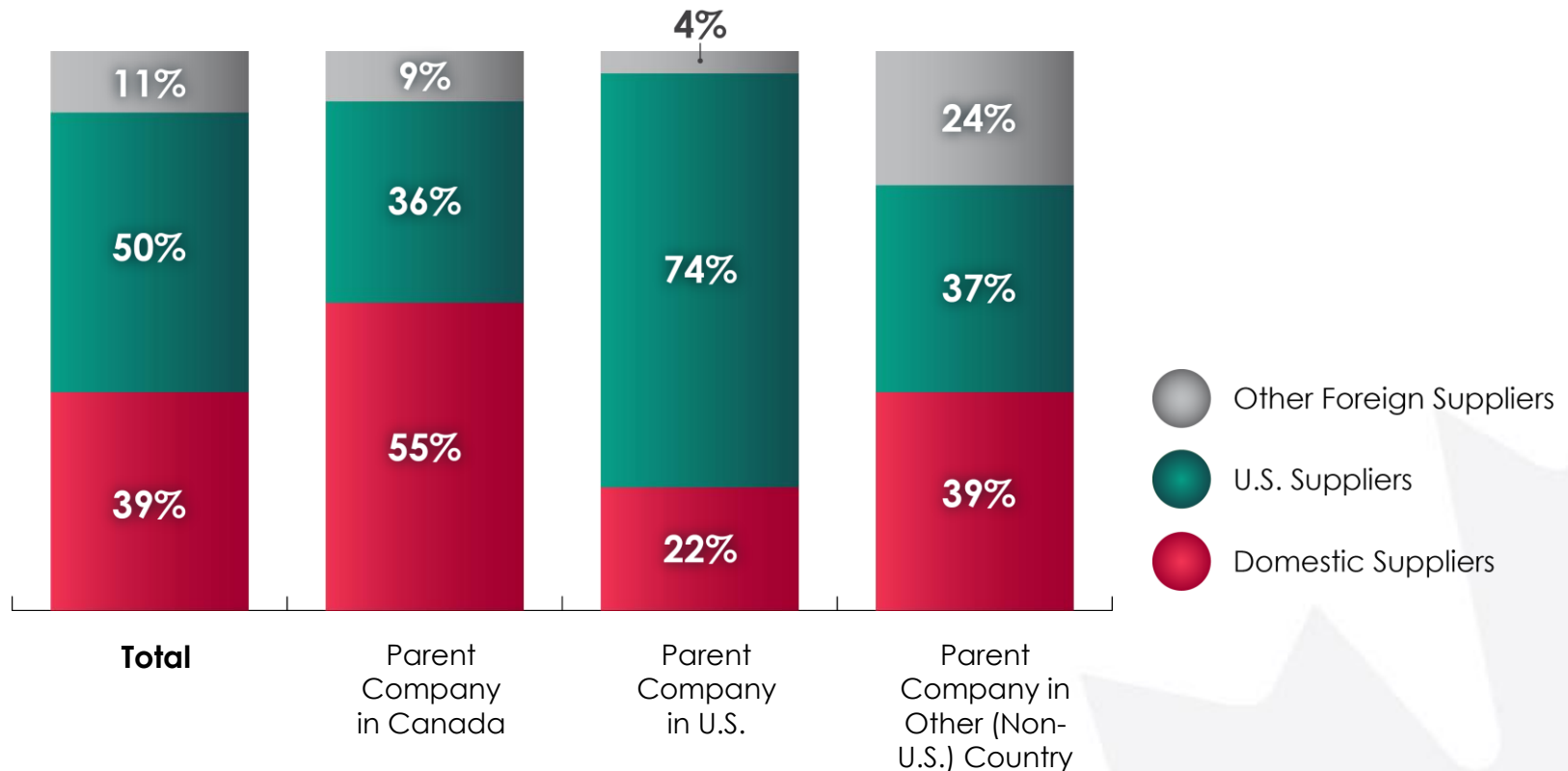


- Canadian operations of foreign-owned firms contributed to over 40% of the industry's R&D investments

Source: Statistics Canada Canadian Defence, Aerospace and Commercial and Civil Marine Sectors Survey (2014), 2016

Sourcing patterns varied according to firms' country of ownership

Sourcing Patterns of Domestic vs. Foreign-Owned Businesses



- Canadian-owned aerospace operations purchased the majority of their materials and supplies from Canadian suppliers

Source: Statistics Canada Canadian Defence, Aerospace and Commercial and Civil Marine Sectors Survey (2014), 2016

Key findings

- Canada's aerospace industry contributed more than \$28B to GDP and 211,000 jobs to the Canadian economy in 2015
- Canadian aerospace manufacturing was the number one R&D investor across manufacturing industries, was over five times as R&D intensive as the manufacturing sector average and accounted for close to 30% of total manufacturing's R&D investments
- Innovation-relevant occupations accounted for over 30% of the aerospace industry's direct employment; annual compensation per employee in aerospace manufacturing was 60% above the manufacturing sector average
- Close to 80% of aerospace manufacturing was exported, and the industry was 55% more export intensive than the manufacturing sector average and twice as trade diverse
- Close to 55% of aerospace exports were supply chain related, and these grew by 50% between 2010 and 2015
- Canadian-owned aerospace firms accounted for the majority of the industry's overall activities; Canadian operations of foreign-owned firms contributed to over 40% of the industry's R&D investments
- Sourcing patterns varied according to firms' country of ownership; Canadian-owned aerospace operations purchased the majority of their materials and supplies from Canadian suppliers

Annex

Table 1: Economic and Employment Impacts of Canadian Aerospace Product and Parts Manufacturing and MRO Industries, 2015*

	Impact on Canadian GDP (\$ Million)				Impact on Canadian Employment (Persons)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Aerospace Manufacturing	9,461	5,492	4,435	19,388	57,663	43,146	34,118	134,927
Aerospace MRO	3,800	3,188	2,081	9,069	31,298	28,758	16,832	76,888
Aerospace Total	13,261	8,680	6,516	28,457	88,961	71,903	50,950	211,814

* There was a revision on aerospace product and parts manufacturing employment and GDP statistics in 2014 by Statistics Canada
 Source: ISED's economic model estimates based on data from Statistics Canada Business Registry and CANSIM, National Input-Output Multipliers (2011 adjusted to 2015 GDP and employment), Canada Revenue Agency, OECD and firm-level observations, 2016

Annex

Table 2: Canadian Aerospace Industry Economic Activities Breakdown, 2015 adjusted*

	Aerospace Manufacturing	Aerospace MRO	Aerospace Total
GDP (\$ Million) (% Change of 2014-2015)	9,461 (-5%)	3,800 (+8%)	13,261 (-1%)
Employment (Persons) (% Change of 2014-2015)	57,663 (-4%)	31,298 (+3%)	88,961 (-1%)
Revenues (\$ Million) (% Change of 2014-2015)	22,179 (+9%)	7,659 (+3%)	29,838 (+8%)
R&D (\$ Million) (% Change of 2014-2015)	1,874 (-1%)	40 (N/A)	1,914 (-1%)

* There was a revision on aerospace product and parts manufacturing employment and GDP statistics in 2014 by Statistics Canada

Source: ISED's economic model estimates based on data from Statistics Canada Business Registry and CANSIM, National Input-Output Multipliers (2011 adjusted to 2015 GDP and employment), Canada Revenue Agency, OECD and firm-level observations, 2016

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Table 3: Canadian Aerospace Industry Economic Activities Breakdown, 2010-2015 adjusted*

		2010	2011	2012	2013	2014	2015
GDP (\$ Million)	Aerospace Manufacturing	8,493	8,610	8,974	9,485	9,976	9,461
	Aerospace MRO	3,048	3,266	3,348	3,322	3,520	3,800
	Aerospace Total	11,541	11,876	12,322	12,807	13,496	13,261
Employment (Persons)	Aerospace Manufacturing	52,801	54,067	56,648	58,079	60,139	57,663
	Aerospace MRO	24,837	27,050	28,542	28,695	30,242	31,298
	Aerospace Total	77,638	81,117	85,190	86,774	90,381	88,961
Revenues (\$ Million)	Aerospace Manufacturing	13,953	16,147	15,860	17,926	20,310	22,179
	Aerospace MRO	6,078	6,620	6,985	7,022	7,401	7,659
	Aerospace Total	20,031	22,767	22,845	24,948	27,711	29,838
R&D (\$ Million)	Aerospace Total	1,552	1,662	1,837	1,988	1,936	1,914

* There was a revision on aerospace product and parts manufacturing employment and GDP statistics in 2014 by Statistics Canada

Source: ISED's economic model estimates based on data from Statistics Canada Business Registry and CANSIM, National Input-Output Multipliers (2011 adjusted to 2015 GDP and employment), Canada Revenue Agency, OECD and firm-level observations, 2016

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Table 4: Share and Growth of Aerospace Exports by Region, 2010-2015

	Share of Total Exports (2015)	Growth of Exports (2010-2015)	Growth of Exports (2014-2015)
United States	60%	77%	15%
Europe	21%	14%	20%
Asia Pacific	12%	105%	23%
South and Central America	3%	9%	-5%
Middle East	2%	-8%	-43%
Africa	2%	11%	-1%

Source: Global Trade Atlas (2015), 2016

Annex

Table 5: Share and Growth of Aerospace Exports by Product Category, 2010-2015

	Share of Total Exports (2015)	Growth of Exports (2010-2015)	Growth of Exports (2014-2015)
Airplanes & Rotorcraft	43%	58%	17%
Engines*	27%	47%	11%
Other Parts	11%	64%	2%
Avionics	9%	24%	19%
Landing Gear*	7%	85%	17%
Simulators	3%	43%	9%

* Engines and landing gear include their respective systems and components
Source: Global Trade Atlas (2015), 2016

Annex

Table 6: Shares of Total Defence Industry Sales and Exports by Associated Domains, 2014

	Aerospace	Marine	Land and Cross-Domain/Other
Sales	47%	13%	40%
Exports	48%	10%	42%

Annex

Table 7: Canadian Aerospace Defence Sales by Type of Goods and Services, 2014

	Sales (\$ Million)	Share of Aerospace Defence Sales
Military Aircraft Maintenance, Repair and Overhaul Services	2,001	43%
Aircraft Fabrication, Structures and Components	1,012	22%
Airborne Communications, Navigation, & Other Information Systems, Software, Electronics	765	17%
Airborne Sensor/Information Collection; and Fire Control, Warning & Countermeasures Systems	578	12%
Simulation Systems for Aircraft	153	3%
Military Space Systems	90	2%
Unmanned Aerial Systems/Vehicles & Components	40	1%
Total Aerospace Defence Sales	4,639	100%

Source: Statistics Canada Canadian Defence, Aerospace and Commercial and Civil Marine Sectors Survey (2014), 2016

Canada 