ANNEX B: KEY INDUSTRIAL CAPABILITIES IN CANADA

CADSI's believes the key to developing a Defence industrial strategy is to first identify key industrial capabilities that help Canada achieve its national security, economic and sovereign interests.

Key Industry Capability (KIC) Areas

For The Purpose of Security & Sovereignty

1. **(IA/Cyber) IT Security Architectures, Systems Integration, and In Service Support.** Canada purchases data and IT security technology from various sources, but requires Canadian industry to design, deploy, and support our nation's integrated IT security solutions. There is a defence and security industrial base in Canada to support this requirement, which is required to provide systems integration and in service support to Canada's Information Assurance and Cyber security solutions, at the government level for both defence and security, and at the industrial critical infrastructure level for national security.

2. **Space-Based Radar Surveillance**. Canada's geographical situation is relatively unique and presents substantial challenges for both security and sovereignty – in particular, the vast expanses of the east and west coast maritime regions and the arctic regions. Given weather and expanse, the only practical way to monitor these regions is using radar satellites. Over the past twenty-five years, Canada has developed a world-leading space-based synthetic aperture radar surveillance industrial capability through development of RADARSAT-1, RADARSAT-2 and the future RADARSAT Constellation Mission. This has led to substantial exports of satellites, satellite components, ground systems, satellite data and value-added services. Radar surveillance supports both defence and security at the national level.

For the Purpose of Sovereignty

3. **C4ISR Systems Integration:** A system is a series of components functionally integrated to achieve a command and control, communications, intelligence, or surveillance capability. . Systems integration is the application of systems engineering to define the requirements for, design, develop, integrate, test, and deliver a system. In defence and security system integrators have the full project management, engineering, test, and delivery capability to create and deliver complex systems against a defined set of operational requirements. Often system integration firms also contain significant operational capability insight to enable them to bridge the gap between operational and derived system requirements. This is especially true in the area of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems integration. Canada will purchase platforms (air, land, and maritime vehicles) from various sources, and build ships and satellites in Canada, but for sovereignty we must be able to integrate the C4ISR systems on and around the platforms and upgrade them over time.

4. **(ISS) Platform In Service Support, Integrated Logistics Support, Maintenance Repair and Overhaul.** In Service Support (ISS) involves the management and execution of support activities to ensure continued attainment of the intended operational capabilities of the system/equipment during its in-service phase. ISS teams conduct

1

ongoing analysis of vehicle performance, predicting and executing on preventative maintenance as required, managing integrated logistics support (ILS) to ensure effective ongoing maintenance activities, and conduct ongoing systems engineering to define requirements, design, develop, and implement technology insertions and capability improvements through ongoing engineering support services. ISS typically also includes the development, delivery, and maintenance of the training program that follows a capability through its life cycle. Canada will purchase platforms (air, land, and maritime vehicles) from various sources, and build ships and satellites in Canada, but for sovereignty we must be able to provide in service support, including repair, overhaul, upgrades, and modifications within Canadian industry.

5. (C4ISR) C4ISR Systems and Solutions. C4ISR is defined by the terms that comprise the acronym, Command & Control (C2), Communications (C3), Computing (C4), Intelligence Surveillance and Reconnaissance (ISR).

> C2 refers to software applications used for command and control and situational awareness. Communications refers to the secure voice and data networks over which command and control is conducted. Computing refers to the (typically) rugged computing that is used to operate the C3 applications over the communication networks. C4 solutions are required for defence platforms, as well as for public safety (first responder) and security teams for their command, control, and communication.

> ISR refers to sensors (including human sensors) that collect data on operational environments, mission systems that integrate and correlate that data into friendly force and enemy force situational pictures, which are then communicated over networks in support of the operational planning and decision making cycles that guide the command and control process. This is one of Canada's largest and broadest technology bases in the defence and security industry. The industrial base includes Command and Control centre and system companies, a number of proven communications companies, multiple computer/display companies, many geospatial and intelligence system companies, and a number of ISR sensor and mission system solution firms (air, land above water and under water-sonar). Example sensor manufacturing capabilities in Canada include EO/IR sensors, night vision sensors, lasers, radars, sonars, and electronic warfare sensors. Canada's ability to manufacture equipment and sub-systems is a key technology base for export. This capability is supplied to both defence customers for military ISR as well as security customers for critical infrastructure and site ISR.

> It is critical to Canadian sovereignty that Canadian controlled and based companies be able to design, development, deploy, and support integrated C4ISR solutions to connect defence and security platforms.

> Within the C4ISR domain, Electronic Warfare is an important sovereign industrial capability which assures the capability to utilize radio spectrum to meet mission needs. Canada has started to rebuild an industrial base in this domain particularly in addressing countering radio-controlled improved explosive devices. This EW capability is importantly connecting into Canada's deployable Intelligence function.

6. Ordinance/Ammunition. This area focuses on the development and manufacture of ordinance and ammunition. It is critical to Canadian sovereignty that Canada be able to manufacture and supply its own ammunition. Specific policy exists in Canada to ensure that ammunition is developed and supported within Canada. These ammunition are provided to both defense and security users throughout Canada.

7. Small Arms Small arms refers to the design and development of small caliber armaments. Similar to ordinance, Canada has policy, procurement, and an industrial base that provides various small arms. The domestic suppliers also export to approved global markets.

<p align="center">**For the Purposes of Economic Base Sustainment**</p>

8. Shipbuilding and marine industries Canada has a solid, proven, shipbuilding and marine industry sector in Canada, recently enabled and fuelled for the future through the Canadian National Ship Procurement Strategy (NSPS).

9. Armoured Vehicles Canada is a world leading manufacturer of light armoured vehicles, as well as armoured vehicle modification, repair and overhaul. Within this industrial capability area is also a wide range of suppliers of vehicle sub-systems.

10. Aircraft, Special Mission Aircraft and Aircraft Missionization. Aircraft refers to the design, production, and delivery, maintenance and operation of aircraft for military purposes in general. Special mission aircraft include both manned and unmanned aircraft modified for special military and security missions, such as surveillance, border patrol, anti-submarine warfare, search and rescue, or firefighting. Canada has a number of firms engaged in the global market for the delivery, maintenance, and operation of special mission aircraft, the development and delivery of aircraft mission systems, and the customization or missionization of aircraft. Special Mission aircraft are operated by defense users in air forces and navies around the world, as well as public safety and security agencies tasked for various border and site security missions.

11. Simulation and Training Systems and Solutions. Simulation refers to the design and development of live, virtual, and constructive simulation systems, while Training refers to the design, development, and delivery of training systems to employ those simulation environments. This is another component of the Defence and Security industrial base in Canada that is renowned for excellence and leading-edge technologies. It includes a range of Canadian firms engaged in live, virtual, and constructive simulation; the design, development and operation of training systems; and the application of synthetic environments for training, systems integration and C4ISR applications for both defence and security (first responder) customers

12. CBRNE Detection, Protection, and Decontamination. Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) detection, protection, and decontamination solutions span across the defence and security sector**.** Canadian R&D projects have resulted in the establishment of a number of firms with capability in this field who sell into regular defence force customers, special forces, as well as national, provincial, and municipal response teams.

13. (PPE) Personal Protective Clothing and Equipment for Defence and Security. Soldiers, security personnel, maintenance crews, and others all require a range of

specialized protective clothing and equipment to do their jobs effectively. Canada has a number of talented firms in this field that deliver to Canada and export worldwide.

14. Shelters & Containers. Tactical shelters and containers are used by defence and security personnel to ship and protect a range of equipment, and to house personnel and equipment in command, operations, and support centers throughout their missions. This is another area where Canada has several companies participating in the global marketplace.

15. (Services) IT, Procurement, Management, Test & Evaluation, and R&D Services. Canada has a strong services sector that supports the full breadth of the defence and security sector. These services include Project Management, Procurement, Engineering, Scientific and Technical Services, in support of the Department of Defence, research labs at Defence Research and Development Canada, Public Security Departments (Public Safety, Transport), etc.

16. Engines and Power Generation Canada has a number of firms that produce and export engines, power generation, power conversion, and power management solutions.