**Atlantic Canada Opportunities Agency (ACOA)**

**University & College**

**Potential R&D Activities**

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| **R&D Activities** | **R&D Description** | **Atlantic University and/or College** | **Key Contact** |
| **Missile Systems** | Self-propelled precision-guided munition system including missile guidance, missile launching and/or *related technologies*. |  |  |
| **Autonomy and Robotics** | Human/autonomous-system interaction and collaboration, swarm and multi-unit autonomy, machine perception, reasoning, and intelligence, and test, evaluation, validation, and verification. | Dr. Jason Rhinelander and Dr. Sageev Oore, Saint Mary’s University | Kevin Buchan  [Kevin.Buchan@smu.ca](mailto:Kevin.Buchan@smu.ca) |
| **Biological Technologies** | Modification of living cells to produce novel substances, such as bio-fuels, bio-sensors, improved vaccines, and high-strength materials. | Dr. Kevin Vessey, Saint Mary’s University | Kevin Buchan [Kevin.Buchan@smu.ca](mailto:Kevin.Buchan@smu.ca) |
| **Cyber Security** | Development of science and technology for efficient, effective cyber capabilities across the spectrum of joint operations to include the protection of secure networks and surveillance of hostile networks. |  |  |
| **Data Analytics** | Science and applications to reduce cycle time and manpower requirements for analysis and use of large data sets, leading to actionable data. | Dr. Pawan Lingras and Dr. Sageev Oore, Saint Mary’s University | Kevin Buchan [Kevin.Buchan@smu.ca](mailto:Kevin.Buchan@smu.ca) |
| **Directed Energy** | Systems to transfer energy to a target for a desired effect. Energy sources can be electromagnetic, particle-based or acoustic/sonic. |  |  |
| **Energy & Power Technologies** | Power generation, energy conversion, energy storage, power distribution and control, thermal transport and control, electromechanical conversion technologies to enhance operational effectiveness and accelerate fielding of new platforms/weapons. | Dr. Adel Merabet, Saint Mary’s University | Kevin Buchan [Kevin.Buchan@smu.ca](mailto:Kevin.Buchan@smu.ca) |
| **Human Systems, Terrain and Training** | Technologies to extend the capabilities of the human, enhance the capabilities of the human, sustain the human, or repair the human. |  |  |
| **Materials & Manufacturing** | Modeling, development, fabrication and characterization of materials/structures at the atomic/molecular scale and understanding of associated applications (e.g., mechanical, sensor, communications, and medical applications). | Dr. Robert Singer and Dr. Christa Brosseau, Saint Mary’s University | Kevin Buchan [Kevin.Buchan@smu.ca](mailto:Kevin.Buchan@smu.ca) |
| **Next Generation Electronics** | Advancement of scientific understanding of new materials and devices to enhance exploitation and insertion of advanced microelectronics/nanoelectronics and reduce requisite supply chain risk. |  |  |
| **Quantum Technologies** | Quantum mechanics to perform otherwise intractable numerical calculations, provide ultra-secure communications, and simulate exotic materials. |  |  |
| **Sensory Technology & Exploitation** | Physics-based maritime, ground, air-borne, and space-borne sensing capabilities to include EOIR sensors, RF sensors, acoustic, magnetic, and seismic sensors; and associated signal processing, fusion, and modeling. |  |  |
| **Signal Processing & Communications** | Achievement of reliable connectivity through undersea, surface, air, and space layers through the development of robust, cyber-protected and adaptable networks. |  |  |
| **Intelligent Integrated Systems** | Autonomous capability and products, open architectures & communications, sensors and other modular payloads, energy generation, monitoring, storage & propulsion. |  |  |
| **Ballistic Missile Defence** | Advanced radar & scalable combat systems. |  |  |